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SMELTING AND REFINING IN BOND.

In another column we give an abstract which embraces all essential points, of the Treasury circular just issued, to regulate under section 24 of the Tariff Act of last session of Congress, the smelting and refining of imported ores and crude metals in bond. Section 24, in the act referred to, was the only consideration given to the important industries in this country of smelting and refining the precious metals accompanied by lead and copper.

On the face of it, the section looked as if it might afford some relief to the silver-lead smelting companies, and consequently to the miners of dry ores, by adding to the supply of fluxing and silver-gathering material without imposing too high a penalty on those using it, and at the same time without interfering with the protected lead market of purely domestic origin. The section might also prove of value in adding to the business of our copper-smelting establishments by the admission for treatment of foreign ores and mattes which perforce have had hitherto to be shipped to Europe.

The regulations seem to be fairly framed for facilitating such business as they are intended to cover, but there is one anomaly in them that cannot fail to be admitted, and we should hope will be remedied by the Treasury when pointed out.

In clause four of the regulations it is stipulated that if any of the product of the imported ores or crude metal is withdrawn for consumption in the United States, duty shall be paid "on the corresponding quantity as shown by the original assay, of such imported crude metals or ores, without any allowance for wastage incurred in the smelting and refining, but upon the exportation of said refined metal credit will be given on the warehouse bond for the duties on such corresponding quantity of the imported crude metals or ores shown by the assay, and ten per centum of the quantity so shown in addition thereto."

By this it is clear that the Treasury admits that the assay value of the original samples represents in practice a greater quantity than can be extracted after smelting and refining, and, if so, why should this allowance not be made for refined metal withdrawn for consumption in the United States? No injustice would be inflicted on the protected lead miners, as no greater amount of metal would enter into competition with the domestic product than if it were imported in the refined state, while a positive injustice would be done to that amount of lead as is represented by the difference of 10 per cent., in that it being of domestic production (the foreign and domestic ores being smelted together), would have to pay the duty charged on foreign material. It may also be remarked that this arbitrary figure of 10 per cent. allowed for loss would, in the experience of some smelters and refiners, be distinctly insufficient to cover the loss in question.

ANTI-TRUST LEGISLATION.

The recent decision in the case of "The American Biscuit Company vs. KLOTZ & Co." by the United States Circuit Court in New Orleans is interesting and suggestive to "trust" organizers. The KLOTZ bakery had been "sold," as selling is understood by trust companies, to this combination of thirty-five of the largest bakeries in the South. The defendant, becoming dissatisfied, had withdrawn from the trust, and the latter begged the court to appoint a receiver to act in the interests of the Biscuit Company. The court held that the American Biscuit Company could not be regarded as a suitor in court because the terms of the alleged sale were illegal, being in contravention to the anti-trust law. This was a revelation to many gentlemen who had believed that no law against trusts would be enforced; that it would virtually be a dead letter. Thus it becomes apparent that all that is needful for the suppression of such combinations is that they be brought into court.

As a result of this decision it is said the maintenance of the agricultural implement trust was thought impossible. This combine, styling itself "the American Harvester Company," was organized a little more than a month ago with a capital of $35,000,000; it controlled the output of harvesting machinery of the entire United States, and was due to the consolidation of eighteen companies. Simultaneously the collapse of the American Window Glass Company was reported; this was designed to act as a cover for a huge window glass trust, with profits due to economies made possible only by consolidation; the same story that we have heard so many times before, but which is always followed by an advance in prices to consumers. The American Harvester Company states that, after securing the opinion of eminent counsel from different States, it has been brought face to face with grave legal obstacles to the consummation of the enterprise for which it was formed.

The feeling against trusts in the East is very slight as compared to the intense hatred with which they are regarded by the farmers of the West, and a combination on articles so closely allied to their interests would have been a target for the most vindictive and unrelenting hostility and might possibly have been an important factor in influencing restrictive legislation in the near future. The law passed last year by Congress was limited in its application as stated; the principles it supports, however, are of wide application. Missouri has already statutes which restrict the pooling either of railroad or other trades interests, and Senator HAMER has recently introduced a bill in the Illinois legislature which is almost identical in its provisions with the one from which we have already quoted. It is to be hoped that Senator HAMER'S colleagues may take the same view of this matter and that his example will be followed in other State legislatures.

The organization of the great combination between the Western roads is as yet too young to give indication of where it will injure the public; but it is only a further and the greatest step yet taken toward the consolidation of interests and the creating of monopolies. If the power which combination gives be used simply to lessen the cost of handling business, this combination may not meet with much outside opposition; but power to oppress always develops tyranny, and should the railroads use their power to greatly advance transportation charges, no doubt those affected will organize a new granger crusade.

The steel-rail combination, and especially the proposed lead-smelters' "trust," are examples that will evoke much opposition. The former has already announced an advance of from $2 to $3 a ton in the price of steel rails; and even before the formal organization of the smelters' combina-

tion, owing to causes explained in these pages last week, smelting charges have been very materially advanced. The miners will, rightfully or wrongfully, accuse the combination of oppressing them. They have themselves, however, to thank for it. They wanted foreign lead ores excluded, and they got it with the effect of building up a rival smelting industry in Mexico, of injuring our own smelters, and with the further effect of increasing the smelting charges they themselves have to pay.

This lesson, we trust, will convince many of them that they were made the dupes, the cat's paws, of some designing persons, who have profited largely by their folly and laugh at their gullibility.

THE PROFITS OF MINING.

The dividend table which we published in our last annual statistical number showed a total of $13,743,748 paid during the year by 65 companies, against $10,537,522 paid by 61 companies in 1889. This great increase in amount was due to the appearance of many new companies in the list, and to the larger amounts paid by many companies, notably those of Lake Superior, Montana and Utah. There were, in 1890, 18 companies declaring their first dividends during the year, which paid $1,227,750, and seven companies paying $380,500, which paid nothing in 1889.

There were, on the other hand, 22 companies not in the list of 1890, which paid dividends in 1889, but the total of their amounts, $817,960, was but little more than one-half that of the new companies in the list of last year.

In the case of the Lake Superior copper mines our statistics are complete, and for that reason the most valuable. It appears that eight of these companies paid dividends to the amount of $3,415,000, an increase of $445,000 over the preceding year. The Calumet & Hecla paid $2,000,000, the same amount as in 1889; the Tamarack, $590,000, an increase of $150,000; the Quincy, $320,000, an increase of $40,000; the Osceola, $225,000, an increase of $175,000; and the Franklin, $100,000, an increase of $20,000. The Atlantic paid the same amount as in the preceding year, but the Central paid only $20,000, a decrease of $20,000. The Kearsarge paid $80,000, and declared its first dividend during the year. The market value of these eight Lake Superior companies, January 1st, was $39,845,000, and their dividends of the year were 8·5 per cent. of this amount. Four of them paid over 10 per cent., and three more than 13 per cent. The Atlantic paid the largest percentage, viz., 16·5 per cent. The total dividends paid by this group of mines amount to the immense sum of $47,187,500, of which $34,850,000 has been from the Calumet & Hecla.

The Montana and Arizona copper companies also paid largely increased dividends, but our list is incomplete, as it does not include the Anaconda, which makes public but little information concerning its affairs, and some other producers. The Copper Queen Company, of Arizona, paid $210,000 against $70,000 the previous year, and the Boston & Montana $625,000 against $500,000, the former amount being a trifle more than 15·3 per cent. on the present value of its shares.

Among the silver mines, the list is headed by the famous Granite Mountain, which paid $2,400,000, the same amount as in 1889, swelling its total to an even $10,000,000. The percentage paid on the market price of its shares, however, was a trifle less than in 1889, being 13·9 per cent. against 14·3 per cent. The Bimetallic adjoining the Granite Mountain, commenced dividends during the year and paid $270,000. In Utah, several of the important mines made notably increased payments. The Ontario declared dividends to the amount of $1,650,000, against $950,000 in 1889; the Mammoth, which commenced dividends in 1887 and paid $130,000 in 1889, jumped to $520,000 in 1890, making its total to date $720,000; the Horn Silver assumed its old position of importance and paid $200,000, four times the amount of the preceding year; and the Centennial-Eureka paid $150,000. The Daly made no increase, paying $450,000.

On the Comstock Lode the year was not a prosperous one, and of the long list of famous old bonanza mines, the Consolidated California & Virginia alone appears in our table. Its dividends were $162,000, a decided decrease from $756,000, the amount paid in 1889. Of course the Comstock is now by no means what it was in its days of glory, but for all that its mines are even now producing no inconsiderable amount of bullion, and very many of them can be, and undoubtedly are, worked at a profit, only, however, that profit, instead of going to the shareholders in the form of dividends, goes into the pockets of the swindling mill ring.

The Leadville mines appeared to but little more advantage than the Comstock, as the Little Chief and Small Hopes are the only ones in our last list of dividend payers. At the Carbonate camp, however, it must be remembered that the most important producing mines at the present time are unincorporated or owned by close corporations which make no public statements. The same is the case at Aspen of which mines we give only the Aspen Mining and Smelting company, paying $200,000, and the Little Rule $100,000. The two great silver mines of the San Juan, the New Guston and the Yankee Girl, both now owned by English companies, paid largely increased dividends during the year, and very large percentages upon their market value at the close of the year.

Among the gold mines there was a general falling off. The Homestake paid $150,000, the Idaho, $29,300, and the Montana, limited, $178,000, in each case a smaller amount than in 1889, the total paid by these three great mines in that year being $572,000, and only $357,000 in 1890. The total paid to date by the three, now amounts to $12,395,300—a grand showing.

The two quicksilver mines of California made an increase, the Napa paying $40,000, a trifle more than 10 per cent. on its present value, and the Quicksilver preferred $257,478, which was 15·4 per cent.

The high percentage upon the market value of their shares paid by many gold and silver mining companies is particularly noteworthy. Thus the Mammoth, of Utah, paid 40 per cent upon $1,300,000; the Calliope, of Colorado, paid 34 per cent.; the Cœur d'Alene, of Idaho, 32 per cent.; the Montana, limited, Montana, nearly 31 per cent., and the Ontario, of Utah, 27·5 per cent. on $6,000,000.

It is impossible to collect complete statistics upon this subject for the reason already stated that very many of the largest dividend-paying mines, such as the Anaconda, Sheridan-Mendota, Henriett and Maid, Minnie and Blue Bird, are owned by individuals and close corporations, which do not make public the amount of their dividends. Our statistics are a partial contribution upon the subject, only, but are valuable, as showing the profit with which mining operations are carried on. The actual return, based upon the total dividends ($11,475,428) paid by thirty-six companies, for the shares of which we have been able to obtain quotations, viz., on a market value of $89,200,500, was almost 13 per cent. In 1889, it was a trifle more than 12 per cent. on $78,111,150, and in 1888, it was 12·5 per cent. on $90,045,531. The total dividends paid to date by the sixty-five companies quoted in our list amounts to the enormous sum of $116,950,302.

NEW PUBLICATIONS.

A NEW BASIS FOR CHEMISTRY. By THOMAS STERRY HUNT, M. A., LL.D. 3d edition. Scientific Publishing Company, New York. 1891. $2.00.

To those who are as yet unacquainted with this work of Dr. Hunt, and who are interested in the study of the ultimate nature of matter, and of the methods pursued by nature in the formation of different species, we can confidently recommend a study of the facts and theories set forth by the author.

The standard of weight with which all bodies should be compared to secure uniformity is naturally the lightest substance known; gases and vapors are thus compared with hydrogen, and we know that their molecular weights vary directly as their specific gravities; solids and liquids on the other hand are compared with the arbitrary standard of water, and to that extent are of less value than if referred to the universal standard of hydrogen. The generally accepted molecular weights of solid and liquid bodies represent, as a rule, the smallest possible molecular weight of a supposititious gas of the same percentage composition. Thus we say that the molecular weight of calcium carbonate is 100, and of acetic acid 60, which is the inferior limit in both cases, and which we know cannot be the true value. Acetic acid which boils at about 119° C. gives a vapor at 125° C., which corresponds to a molecular weight of 90, and it is not until the temperature is raised to 250° C. that the observed specific gravity agrees with that calculated from the assumed molecular weight; vapor which is formed at 62½° C. has a density which agrees with a molecular weight of 120, or double that ordinarily assumed for the liquid acid. Similar instances are afforded by many other substances which form vapors of densities corresponding to different molecular weights according to the temperature to which their vapors are exposed. It is evident that we cannot claim that the liquid or solid molecule is less complex than the most complex vapor which it forms, and analogy leads to the conclusion that the liquid or solid molecule is much more complicated than the gaseous one, the weight of which is usually assumed as the true molecular weight of the substance.

These observed variations in density of vapors and gases are obviously due to polymerization, and we cannot escape the conclusion that the liquid and solid forms are also polymers of the simple gaseous molecule and polymers of much higher molecular weight. In many cases we have more than one solid polymer which differ from each other in their chemical and physical relations as, for instance, in the different forms of carbon, sulphur and phosphorus. We have carbon in at least three forms: amorphous, graphitic and diamond, the first two probably being capable of still further subdivision; we know that the graphitic carbon molecules are entirely distinct from other carbons, since they form graphitic acids which other carbon does not; we thus cannot avoid giving other molecular weights to the graphites than we do to amorphous carbon.

In view of these and similar facts, Dr. Hunt argues that since a certain large number of gaseous molecules are condensed into the space occupied by one in the formation of liquid and solid species, that is, since these liquid and solid species are polymers of the gaseous ones, that their true molecular weight is represented by the number of gaseous molecules condensed, multiplied by the molecular weight of the gaseous molecule. In other words, by doubling the specific gravity of the substance as referred to hydrogen we have the true molecular weight of the species.

All so-called physical changes of state are regarded by Dr. Hunt as essentially chemical. If we start with ice and apply heat, we find that the crystalline species, ice, is decomposed into a liquid species, water, of higher specific gravity and therefore of higher molecular weight; on heating the water to boiling, another decomposition begins; this time the gaseous species, steam, is formed; on continuing the application of heat the gaseous molecule is finally dissociated into its constituent elements of oxygen and hydrogen. In each of these cases a certain amount of heat becomes latent, to reappear when the process is reversed. These changes,

both of depolymerization and of dissociation, are strictly analogous, excepting that the products in the first case are homogeneous and in the second case heterogeneous, and they are accompanied by thermal effects of the same order of magnitude, which varies in degree with the work done, as we should expect.

It is evident that if we accept the idea of high molecular weights which follows from these considerations, our ideas, as expressed by the atomic theory, with its related hypotheses, will require essential modification. The theory of ultimate atoms and of combination, which consists in the juxtaposition of these atoms, is replaced by the doctrine of absolute continuity of matter and of combination consisting of the absolute identification of volume of the combining substances.

The doctrine of valency which is so generally taught fails completely if we try to apply it to this idea of polymerized substances, but this doctrine also fails to explain so-called molecular compounds and salts containing water of crystallization, and has to be very generously extended to embrace some well-known and definite compounds. Its representative structural formulæ should be considered, not as facts truly showing the relative arrangement of atoms in space, but merely as we regard a genealogical tree, representing to the eye in a convenient form certain ideas which we wish to convey in relation to the properties and relations of the bodies considered.

We may observe the phenomenon of polymerization in the laboratory in the slow formation of many precipitates, such as gypsum, and in the change of a gelatinous to a crystalline precipitate, as in the case of the manganese ammonium phosphate. In natural mineral species we find instances of polymeric forms of the same primary species, such as calcite and aragonite, the different forms of silica, of sulphide of zinc, etc. These differently condensed species are unequally acted upon by chemical reagents, the more condensed forms being the most inert.

The molecular weights which are calculated for the solid and liquid forms of matter are naturally very large numbers; water, for instance, is represented as 1,192 (H_2O) or 21,408, and calcite as 584 ($CaCO_3$), or 58,400.

When a body is dissolved in a suitable solvent, there is generally some thermic change which is indicative of chemical action being performed. When Raoult's method of determining the molecular weight of the dissolved substance is applied to the solution, the molecular weight determined is not that of the pure material, but of the less complex molecules which approximate to the gaseous condition with the increasing amount of the solvent.

Quite recently Messrs. Brown and Morris (Chem. Soc. J., LV., 462) have determined the molecular weight of soluble starch by Raoult's method, and find that it must be represented by the formula $5\,(C_{12}H_{20}O_{10})_{30}$ with a value of 32,400. Now, if we calculate the molecular weight of starch by Dr. Hunt's method, from its specific gravity as given in Watt's Dictionary of Chemistry, viz., 1·505 at 19·7° C., we obtain a value of 32,219, which if not absolute proof of the correctness of Dr. Hunt's views, is a very strong argument in their favor. Even this agreement, close as it is, can be still improved, since the specific gravity requires correction for the expansion of water from 4° to 19·7° C. When this correction is applied the calculated molecular weight is 32,275.

We cannot expect to find many such agreements except possibly among organic compounds of similar nature, since the very act of dissolving the substance tends to depolymerize its molecule, so that it will probably only be among colloids that other instances of agreement will be found.

WEDDING'S BASIC BESSEMER PROCESS.—Translated from the German by William B. Phillips, Ph. D., Professor of Chemistry and Metallurgy, University of Alabama, and Ernst Prochaska, Metallurgical Engineer. With a supplementary chapter on Dephosphorization in the Basic Open-Hearth Furnace, by Ernst Prochaska. Illustrated, 221 pages. Scientific Publishing Company, New York, 1891. Price $3.50.

The Basic Bessemer process has long since passed the experimental stage, and now deserves to rank among the great industries of the world. In 1882 there were produced by the process about 200,000 tons of steel and above 60,000 tons of slag. In 1889 the output had risen to about 2,000,000 tons of steel and about 600,000 tons of slag. As a fertilizing material the slag has forced its way, against adverse criticism, to a secure place as a merchantable article.

This development, however, has taken place entirely in Europe, and chiefly in Germany. In the United States legal complications concerning the patents, the enormous development of mines producing ores suitable for the acid process, and other causes, have continued to delay its introduction. In October, 1890, however, the Pottstown Iron Company, of Pottstown, Pa., began, for the second time, the manufacture of basic Bessemer steel and of phosphate slag containing 21% of phosphoric acid, and no doubt other companies will soon follow its example.

The literature of the basic process, in the English language, has heretofore been confined to the pages of scientific journals and the transactions of technical societies. In German, however, Dr. Herman Wedding's work, published in 1884, has held high rank among technical monographs. It is this work which Messrs. Phillips and Prochaska have translated, and in so doing they have given us the only book on the subject in the English language.

The first chapter gives a brief description of earlier methods of dephosphorization, such as washing the ores by acid, as practised at Kladno, near Prague; the Catalan process, in which the low temperature and the basic slag, rich in oxide iron, tend to prevent the reduction of the phosphoric acid contained in the ore; refining and puddling processes, in which part of the phosphorus in the iron is oxidized and may be removed in the slag; and Krupp's and Bell's washing processes, which are modifications of the refining process, and in which oxide of iron is used as a lining for the refining vessel.

The author credits Tunner, of Leoben, with being the first to recommend, in 1860, a non-silicious lining for the converter, of burned magnesite; Dr. Wedding himself recommended the use of oxide of iron for a converter lining, and Daelen recommended that only the lower part of the converter be lined with oxides. These and other early recommendations reached the experimental stage only. The first fortunate step was taken by the Englishman Sidney Gilchrist Thomas, in making dolomite bricks that would stand. His first German patent, in 1878, was entitled a "method for the manufacture of fire-proof basic bricks by mixing dolomitic limestone with small quantities of silica, alumina and oxide of iron, forming the mass into bricks and burning the bricks at white heat." Thomas also discovered that limestone was the proper flux for the process to neutralize the silica produced by oxidation of the silicon of the pig. He also patented in 1879 "the after-blowing after complete decarbonization in connection with the addition of basic substances, through which a basic earthy slag is obtained, in a basic lined Bessemer converter." Thomas thus discovered the three principal conditions of the success of the process; the practical basic lining, the basic flux and the after-blowing.

The second chapter is devoted to a discussion of Thomas' and other patents on the basic lining, the materials of which this lining may be made, their preparation, the manufacture of the basic bricks, including the mixing of the dolomite with tar and their burning. The difficulties connected with the manufacture of these bricks are described at length. The third chapter describes the various forms and dimensions of basic lined converters used at different works, and the methods of lining and repairing. Numerous illustrations are given. Then follows a description of the materials used, with analyses of pig irons, and discussion of the necessity of certain limitations in the chemical constitution of the irons which may be used in the process; the use of pig direct from the blast furnace, and of smelted pig, is treated of; also the recarburizers, spiegeleisen, ferro-manganese, ferro-silicon, and manganese silicon, and the lime used as an addition. The formulæ for calculating the amount of lime required are also given. The quantity and pressure of blast, size and description of blowing engines, and the influence of heating and of cooling the blast, are then discussed.

Chapter 5 is devoted to details of practice, including duration of the process, capacity of the converter, waste, pouring devices, cranes, ingot handling, etc. Many illustrations of apparatus are given.

Chapter 6 describes the chemical and physical reactions of the process, and includes Finkener's investigations of the practice at Ruhrort, with analyses of the materials at different periods during the blow, Richards' and Stead's investigations in England, also calculations of the heat evolution and requirement by Ehrenwerth and others.

Chapter 7 illustrates the arrangement of Bessemer works at different places. Holley's arrangement is shown, also those at Erimus, Witkowitz and Peine.

Chapter 8 gives analyses of basic Bessemer slag and discusses its use as an addition in the blast furnace for the purpose of making the pig contain the desired percentage of phosphorus, and also its preparation and use as a fertilizing material.

Chapter 9 briefly treats of dephosphorization in the open hearth, as practised in Germany and France, and Chapter 10 discusses the economic results of the basic Bessemer process. A catalogue of the works running in 1884 is given, showing a total of 32 works, with 88 converters, and a capacity of 795 tons per heat, which at 10 heats per day and 300 working days in the year is equal to an annual capacity of 1,100,000 tons of steel. As shown in the preface, however, the actual output had risen in 1889 to about 2,000,000 tons.

The supplementary chapter, by Mr. Prochaska, on Dephosphorization in the Basic Open-Hearth Furnace, describes the preparation of the magnesite bricks, and the construction of the furnace, and gives the details of practice at Resicza, in Hungary. The saving of the basic over the acid open-hearth process at that place was $1,444 in fuel and $3,908 in raw material per ton of steel, while the extra cost of labor and of the basic additions was only 0·220 cent per ton of steel. The amount of phosphorus in the steel is never over 0·03%. The process has made wonderful progress in the last six years. In quality of product it surpasses all other processes, and it enables the metallurgist to use material with a medium amount of phosphorus which cannot be used in any other steel process, being too high in phosphorus for the acid Bessemer or open-hearth process, and too low for the basic Bessemer.

Messrs. Phillips and Prochaska have placed English and American metallurgists under obligations to them for their excellent translation of Dr. Wedding's work. The style is very clear and readable. The work fills a gap in English metallurgical literature, and will be heartily welcomed by all who are interested in modern steel producing methods.

BOOKS RECEIVED.

[In sending books for notice, will publishers, for their own sake and that of book buyers, give the retail price?—These notices do not supersede review in another page of the Journal.]

Brickmaking and Burning. By J. W. Crary, Sr. Published by T. A. Randall & Co., Indianapolis, Ind., 1890. Pages 122. Price $2.50.

Eighth Annual Report of the Bureau of Labor and Industrial Statistics of Michigan, Feb. 1, 1891. Lansing, 1891.

First Annual Report of the Geological Survey of Ohio (Third Organization) By Edward Orton, State Geologist. Published by authority of the Legislature, Columbus, O. The Westbate Co., State Printers, 1890.

The Colliery Engineer Pocket-Book of Principles, Rules, Formulæ and Tables. Specially compiled and prepared for the convenient use of colliery officials, mining engineers and students preparing themselves for certificates of competency as mine inspectors or mine foremen. Generously illustrated. Scranton, Pa. The Colliery Engineer Company, Coal Exchange, 1891.

Pumps. Historically, theoretically and practically considered. By Philip R. Björing. Published by E. N. & F. Spon, London and New York. 1890. Pages, 231. Price, $2.50. Illustrated.

The Washington Bridge. A description of its construction by William R. Hutton, Chief Engineer, Member of the American Society of Civil Engineers, and Société des Ingénieurs Civils of France. Illustrated with 26 albertypes and 37 double and single page lithographs. Leo von Rosenberg, New York.

Twelfth Annual Report of the Bureau of Labor Statistics of the State of Missouri, for the year ending November 5, 1890, Jefferson City, Mo., 1890.

Twelfth Annual Report of the Bureau of Labor Statistics, Missouri, 1890. Vol. II. *Mines and Miners,* Jefferson City, Mo., 1890.

CORRESPONDENCE.

We invite correspondence upon matters of interest to the industries of mining and metallurgy. Communications should invariably be accompanied with the name and address of the writer. Initials only will be published when so requested.
All letters should be addressed to the MANAGING EDITOR.
We do not hold ourselves responsible for the opinions expressed by correspondents.

Where is the Market for Native Realgar?

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: Can you kindly inform me if you know of a market either here or in England for good quality of native realgar, a sulphide of arsenic? I am told that there is a large deposit of this mineral in the state of Washington.

C. H. JOUET.

ROSELLE, N. J., January 5th, 1891.

Remedies for the Smoke and Sulphur Nuisance.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: Mr. E. M. Riotte, in reply to the question of Mr. Roberts, Health Officer of Butte, Montana, in your issue of the 10th inst., advises the use of a certain condenser to be attached to all furnaces to get rid of the dust, sulphur fumes, sulphur hydrogen and other undesirable gases. Mr. Riotte is certainly not aware of the conditions prevailing at Butte; nor does he seem to be conversant with the manner in which the roasting is principally conducted there, and with the size of the problem to be dealt with. There are from 1,200 to 1,500 tons of copper ore piled in heaps for roasting daily. It requires from two to three weeks to thoroughly roast these ores in heaps, and therefore about 25,000 tons of ore are constantly in process of open-air roasting, besides a good deal in kilns and some in calcining furnaces and Bruckner cylinders.

It is mainly from the heap roasting and kilns, and not the reverberatory and blast furnaces, that the nuisance comes, and consequently, the condenser recommended by Mr. Riotte would be useless. With the completion of the large smelting plant in course of erection at Great Falls which will probably be late in 1892, Butte will be relieved of the fumes produced by the Boston and Montana works and probably also the Butte and Boston, and the only ore roasting will be done by the Parrots Silver and Copper Company, the Butte Reduction Company and the Colorado and Montana Smelting Company. These plants are situated in the valley, however, and will trouble the city but very little, if at all.

61 BROADWAY, New York, Jan. 15, 1891. S. RAUNHEIM.

Silver Production of Germany.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: In your issue of November 15th there was a letter from Mr. E. O. Leach, Director of the United States Mint, objecting to my statement of the silver production of Germany, which should have received my attention before, but, unfortunately, the said issue reached me but yesterday.

The official statistical publications of the German Empire, it is true, state the value of silver ore produced in other German mines (outside of Saxony) to be 41,223 marks; but this item, "silver ore," means mineral containing silver as the chief element of value, whereas all silver-bearing lead and copper ores are classified as lead and copper ores.

In order to explain whence I obtained the figures which you so kindly published, I shall have to repeat them, taking advantage of the opportunity at the same time to correct a mistake regarding the silver production of Saxony.

According to the official statements of the Oberhüttenamt of Freiberg in *Jahrbuch des berg- und hüttenmännischen Vereins zu Freiberg*, the silver production of the Saxon mines in 1888 was 32,000 kilograms. The amount, 27,000 kilograms, which I gave in my former statements was the production of the Freiberg mining district proper only.

The official statistics published by the Prussian Ministry of Public Works give the production of the Mansfield mines in 1888 as 469,747 tons of ore, containing an average of 33·35 kilograms copper and 0·196 kilograms silver per ton, from which there were produced 78,996 kilograms silver.

By the same authority the silver production of Lower Harz was 6,795 kilograms, all coming from Rammelsberg ore (of which about 50,000 tons were reduced). The Upper Harz produced in 1888 49,769 kilograms silver from 13,514 tons of Harz ore and 3,294 tons of imported ores.

Making allowance for higher silver contents of the imported mineral, I estimate that in Upper Harz about 30,000 kilograms silver were produced from German ore, and I think this estimate is not far wrong, considering that the lead ore produced in the Harz is rather rich in silver. As to Rhein Nassau district it is difficult to give exact figures, as all smelting works there are private concerns. The same official statistics give a total silver production of this district in the year 1889 of 104,965 kilograms. The domestic ore treated in 1888 was 81,817 tons, and I estimate, from my knowledge of the industry there, that there was an output of about 60,000 kilograms silver.

The total of these figures is 207,791 kilograms, which, with the correction for Saxony, is the amount that I stated as Germany's silver production in 1888. Some one more competent than I may be able to give exact figures where I have only estimates; but I still maintain that Mr. Leach is wrong in rating Germany as one of the most insignificant silver-producing countries of the world.

BRUNO WETZIG.

HUELVA, Spain, January 2d, 1891.

The Precipitation of Gold in Chlorination.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: I have read with much pleasure the interesting account given by your correspondent, Mr. L. D. Godshall, in your issue of the 29th of November last, of his experience in the recovery of gold from solution. I can endorse all he says regarding the many objections to the use of sulphate of iron as a precipitant.

In looking for an efficient substitute one has many reagents to choose from. All liquid precipitants are in no way superior. There is the inherent difficulty of collecting the precipitated metal. This also applies to the use of sulphureted hydrogen.

The introduction of charcoal for this purpose was undoubtedly a step in the right direction in that it dispensed with the cumbersome and sometimes leaky tanks.

Of all precipitants for gold the insoluble metallic sulphides seemed to offer the best field for investigation, and I propose describing a few of the many experiments conducted in our laboratory, together with an account of the substance which we believe approaches nearest to the ideal as a gold precipitant.

Copper sulphide (CuS) made by passing sulphureted hydrogen through the sulphate or nitrate of copper was found to be of little use on account of its proneness to take up oxygen from the air to form $CuSO_4$. The difficulty of filtering and washing this substance is well known. It seems to be due to the free acid liberated in the reaction $CuSO_4 + SH_2 = CuS + H_2SO_4$ for on passing SH_2 through a boiling solution of the sulphate to which had been added an excess of ammonia, there was obtained a dense black granular precipitate not at all disposed to oxidation.

The method of preparing the sulphide, which, I believe, is ascribed to Mr. C. H. Aaron, was also tried, viz., by adding a boiling solution of $CuSO_4$ to a boiling solution of Na_2S. The precipitate was obtained in this way, and with the ammonia present was found to be almost identical in its behavior to $AuCl_3$. The latter is easier of filtration, but on the other hand the cost of preparation is in favor of the other.

Subsulphide of copper Cu_2S prepared from nitrate of copper and thio sulphate of soda did not react so readily with $AuCl_3$. This was, to a great extent, due to the presence of free sulphur, for upon treating the dried precipitate with sulphide of carbon a more active reagent resulted.

The objection to the use of sulphide of iron was found to be due to its being too universal a precipitant. Sulphide of lead was tried with more success, but unless the gold solution was heated the $PbCl_2$ formed in the reaction remained undissolved, thus retarding filtration. Some of these sulphides were given a fair practical trial, special filter presses being constructed to contain the precipitates. The same difficulties were encountered as are mentioned by Mr. Godshall. The very fact of having to heat the solution and to provide a good fall or its equivalent in air pressure, in order to ensure a ready flow of liquor through the pasty mass, caused us to look for some other means of effecting our purpose.

Now, by fusing either of the precipitated sulphides of copper or by melting together sulphur and copper you obtain the fused subsulphide of that metal Cu_2S. It was in this material that we found a precipitant for gold far and away ahead of all others.

The Cu_2S is prepared for use by crushing it so that as much as possible shall remain on a sieve having 100 holes to the linear inch after all of it has passed through a 60 sieve. In this way there is obtained a fine granular substance easily permeable by cold solutions. Mr. Vautin and myself have submitted it to very severe tests. It is immaterial whether there is present an excess of chlorine or acid. Cold saturated solutions of chlorine containing $AuCl_3$ and free acid, after passing through two inches of the precipitant, contained in a bell jar two and a half inches in diameter, having a piece of cloth tied over one end to retain the Cu_2S, were quite free of gold. An attenuated solution containing one part of gold in five million parts of water, after passing through an inch and a half of the precipitant contained in the same bell jar, showed no gold whatever. It was tested with $FeSo_4$ after evaporating the filtrate to a very small bulk. We have passed 14 gallons of a very rich solution through two inches of the precipitant contained in the two and a half inch bell jar in 25 minutes, with a fall of one foot, without finding a trace of gold in the filtrate.

In practice we prefer to use three vessels to contain the precipitant, which are so arranged that the liquor flowing from the first may run into the second, and from the second to the third. The first of the series is removed when necessary, and the second moved up to take the place of it, and the third the place of the second, and fresh material is put into a new third.

The first vessel will become almost fully charged with gold before any is detected in the second. All that is necessary is to fuse the gold-residue with a little niter and borax.

The following is the reaction which takes place when gold chloride is brought into contact with the subsulphide of copper:

$$3\,Cu_2S + 4\,AuCl_3 = Au_3S_3 + 2Au + 6\,CuCl_2.$$

The precipitation vessels consist each of stout glass cylinders 6 inches diameter by 12 inches long, closed at each end by glass-lined cast-iron caps held together by two bolts. Each vessel has a false bottom to support the filter cloth, and is charged with four to eight inches of the precipitant—a sample of which we have much pleasure in inclosing for your inspection. To enumerate some of the advantages of this precipitant:

1. It admits of an easy passage of solution.
2. It is neither necessary nor advantageous to drive off the excess of chlorine.
3. Downward filtration can be used, thus ensuring a comparatively dry residue at the end of the filtration.
4. It requires but slight pressure, easily obtainable by providing a fall of a few feet for the liquor.
5. The solution does not require to be heated.
6. Very little undecomposed precipitant remains if sufficient solution has been passed through.
7. It does not precipitate copper (which is the metal most likely to be present in solution).

J. T. BLOMFIELD, Assoc. Inst. Chem.,
Chemist to the Newbery Vautin Gold Extraction Co. Ltd.

LONDON, December 16th, 1890.

A Great Canal Project.—According to the report of the commission to consider the feasibility of connecting by a ship canal the waters of Lake Erie with the Ohio River, the construction of such a canal is feasible and comparatively cheap, the water supply being found ample and the grades offering no serious impediment to the work. With the Lake Erie and the Ohio River ship canal constructed and the canal from Buffalo to Albany enlarged to the same dimensions, a chain of interwaterway communication would be established between New York and New Orleans. Its importance would not be greater commercially than from a military point of view in giving control, for defensive purposes, of the lake front, and in furnishing safe communication between New York and New Orleans and all interior points. Governor Beaver in his final message to the Pennsylvania Legislature suggests that the attention of the Congress of the United States be called to this project, with a view of securing federal co-operation on its realization.

THE VERRUGAS VIADUCT.

Written for the Engineering and Mining Journal by E. E. Olcott, E. M.

On the 6th of December last Mr. Edward Eyre, head of the house of Grace Bros. & Co. in Peru, invited a number of gentlemen to visit the new Verrugas viaduct on the Central Railway of Peru, formerly the Oroya Railroad, about 50 miles from Lima, which was then nearly completed. The old bridge at this point was washed away on March 23d, 1889, by a cloud burst which precipitated an immense volume of water into the steep ravine and brought down a large body of earth and stones which swept away the central pier and almost completely destroyed the bridge, which was famous as having been the highest in the world at the time of its construction in 1872. It was 575 feet long, and consisted of three Phœnixville piers or towers connected by Fink trusses; the western pier was 179 feet high, the center one 252 feet high, and the eastern pier 146 feet high.

This bridge was erected under the indomitable William H. Cilley, and it is said that only 95 days elapsed between the arrival of the iron work in Callao and the completion of the structure. The engineer in charge of the construction was Mr. Leffert L. Buck, of New York, and by means of his ingenuity the towers were erected entirely without scaffolding He accomplished this by passing four cables over the chasm, and putting ravelers on them, from which the iron work for the piers was lowered member by member. It is said that he was the originator of this system.

He also devised an ingenious method of accurately locating the piers, necessary on account of the great roughness of the situation. For this purpose, after the position of each pier had been located by triangulation, a steel tape long enough to reach from abutment to abutment (575 feet) was suspended from temporary trestles over a level stretch of ground, the ends of the tape being brought to a definite tension by suspended weights, and the position of the piers as laid out on the level ground, carefully marked upon it. It was then suspended over the chasm under exactly similar conditions, and sights were taken from the points below, located for the piers by triangulation, to the marked points on the tape and the accuracy of the instrumental work thus proved.

The old bridge, like the new one, was erected on a three per cent. grade. Its destruction was carefully described in various technical papers. The great mistake that was made apparently was in not spanning the center of this deep gulch. It appears that the engineer responsible for this was the late W. W. Evans, who was furnished with the profiles and all particulars of the location. It must be admitted, however, that sufficient provision was made for the safety of the bridge under ordinary conditions, as the freshets which had come down in seventeen successive winter seasons had done no damage and it was only the unprecedented cloud burst of March 23d, 1889, which was more than any structure, supported only at the center, could stand. It will be seen in speaking of the new bridge how the recurrence of such an accident has been guarded against.

This accident caused serious interruption to the traffic of the railroad. The company immediately put up a temporary wire cable and transferred passengers and light freight on a swinging cage, but much freight had to be sent from San Bartolome to Surco by pack mules. Many of the mines at Casapalca and Yauli had to be closed down until they could get better transportation for their ores, and all shipping interests were seriously affected.

Soon after the accident the Peruvian Government awarded Mr. M. P. Grace a contract for erecting a new bridge at the same place. Plans were prepared by Mr. Leffert L. Buck for a cantilever bridge supported upon two piers, one on the west or Lima side of the ravine and the other on the east or Chicla side.

The accompanying diagram gives dimensions and details of location. The center span is 235 feet long. The bridge is for a single track, designed to carry as a safe load two locomotives of 97,000 pounds each, with freight cars weighing 3,000 pounds per running foot and to resist a wind pressure of 50 pounds per square foot, which gives a large factor of safety.

The contract was let in April, 1890, to the New Jersey Iron and Steel Works (Messrs. Cooper, Hewitt & Co., of Trenton) and the iron work has been shipped from New York to Colon by Pacific Mail, across the Isthmus by the Panama Railroad, down the west coast of South America by the outh America Steamship Company and then 50 miles to Verrugas by the Oroya road. The approximate total weight of the iron work is 700 tons and the cost of the bridge erected will not be far from $500,000.

Mr. Buck was seriously hampered in making his designs by the restrictions laid by the steamship companies as to the length of members of the trusses, etc., which they would carry. During construction Mr. P. A. Fraser has been the general superintendent of the road and Mr. Albert D. Riffle the engineer in charge of construction; the latter proved himself to be remarkably energetic and competent, and amid the many trying circumstances to have shown splendid perseverance. Few who have read the old accounts of construction under the Meiggs regime can hear the word Verrugas without associating it with the dread disease which bears the same name and which carried off so many men. It is generally believed that it came from drinking the water from the Verrugas stream, as it is only local, not being known beyond two miles up or down the Rimac Valley. It was marked by fever, rheumatic pains, lack of appetite and breaking out of terrible warts, especially on the chest, which bled on the slightest provocation, and often resulted in death. During the construction of the new bridge there has been fortunately but little recurrence of this fatal disease. Mr. P. A. Fraser has just resigned and his place has been filled by Mr. William McCanlish, a Scotch engineer, who has had considerable experience in New Zealand and elsewhere.

The accompanying cuts, showing the bridge and a group of the visitors, who went there on the excursion of Dec. 6, are from photographs taken by the author.

Cable dispatches have just announced the completion of this bridge,

1, 2 and 4. Peons.
3. Station master.
5. Wm. McCaulish.
6. Sr. F. Elguera.
7. Mr. Ford.
8. Peon.
9. P. A. Fraser.
10. A. Rau.
11. L. F. White.
12. John L. Thorndyke.
13. Sr. Don Aurelio Arlarco.
14. M. B. Wells.
15. Percy Batchelor.
16. Sr. Don Manuel Maria del Valle.
17. Fred. Ford.
18. O is Mygatt.
19. Sr. Don Cesareo Chacaltana.
20. Eulogio Delgado.
21. E. E. Olcott.
22. Mr. Van Buren.
23. Mr. Malinouskè.
24. Sr. Manuel Suarez.
25. Geo. A Burt.
26. Edward Eyre.
27. Edward Lane.
28. ——
29. Robt. Peele, Jr.
30. Mr. Matlock.

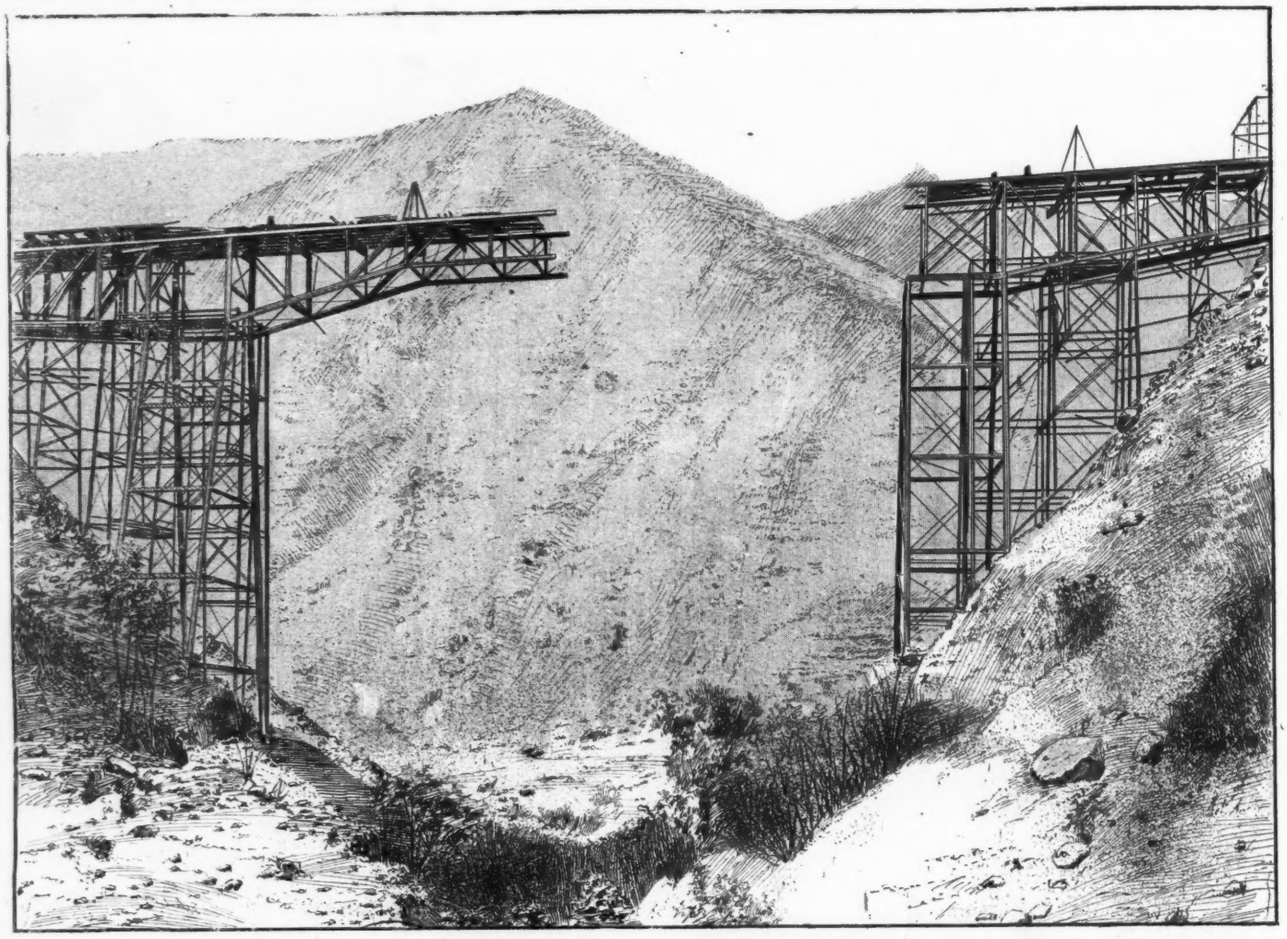
THE EXCURSION PARTY TO THE VIADUCT.

which will give a new impetus to much business in central Peru, especially toward Oroya and the Cerro de Pasco, and Mr. Thorndyke, who has the contract for completing the road to the former place, will now be able to push work more rapidly. The distance from Chicla, the present terminus, to Oroya is 49 miles, and a large percentage of the tunnel work is already finished.

The Oroya road is employing crude Peruvian petroleum as fuel with most satisfactory results. Our excursion party was rushed up 3% or 4% grades at a high rate of speed, and in the 40 tunnels existing on the 87 miles of road already opened the absence of smoke and cinders, we found a decided improvement in railway travel.

The line is to cross the Cordillera at an elevation of 15,648 feet by a tunnel 3,865 feet long. The total length of tunnels between Callao and Chicla is 16,845 feet, and between Chicla and Oroya the total length is 10,104 feet, amounting in all to $5\frac{1}{16}$ miles. Within a few months it is expected that this line will reach the silver mines of Casapalca and Yauli where abundant shipping ores will give traffic to the line; besides the silver mines thus reached it will tap good coal fields.

The English bondholders, represented by Mr. M. P. Grace, who are now in possession of the line, are under obligation to have the road in operation



THE VERRUGAS VIADUCT.

to the Cerro de Pasco within the next three years. Branch lines are talked of from Oroya to the mining districts in the neighborhood and from other points into the heavy-timber country of the head waters of the Amazon.

The Cerro de Pasco branch and its southern connections would form one of the proposed links in the South American International Railway discussed by the Pan American Congress.

This road and the Cerro de Pasco mines were described and illustrated by the ENGINEERING AND MINING JOURNAL December 21st. 1878.

BAUXITE AND KAOLIN IN ARKANSAS.

Abstract of a Report by John C. Branner, State Geologist.

Extensive deposits of bauxite and kaolin, which promise to be of considerable value, have recently been discovered in Arkansas. Bauxite has been found in Saline and Pulaski counties, where it has been known hitherto as "honey-comb rock," and, its identity being unsuspected, has been used for building roads. It is not a common mineral anywhere, and that it has few characteristics which would attract the attention of the casual observer, is probably the reason that it has been overlooked

In most cases the exact thickness of the deposits has not been determined, but in general, it varies from a few feet to over forty feet in thickness; it is thought safe to place its average thickness at about fifteen feet. Like all bauxite, it varies considerably in composition, and in general, its value depends upon its having a high percentage of alumina; and low percentage of iron and silica. A few of the analyses made by the survey are given as follows, in per cent.:

Deposit.	Silica.	Alumina.	Iron (ferric) oxide.	Water.
Pulaski County:				
Little Rock region	10.13	55.59	6.08	28.99
" "	11.48	37.62	1.83	28.63
Saline County:				
Black variety	5.11	55.89	19.45	17.39
Red "	4.89	46.44	22.15	26.68
Red "	3.34	58.60	9.11	28.63

The studies made by the State Geological Survey upon these deposits have led to the following conclusions. Bauxite occurs in Arkansas only in tertiary areas and in the neighborhood of eruptive rocks (granite). Inasmuch as sedimentary beds overlie or have overlain the bauxite, it is probable that there are deposits in the vicinity of the eruptive rocks not yet uncovered by the natural process of erosion. It occurs in irregular deposits, and in the Little Rock region, has thus far been found only at and below the elevation of 300 feet above tide level. The Arkansas bauxite beds are known to cover a total area of about 640 acres in Pulaski and Saline counties.

With the exception of a single bed in Georgia, the Arkansas deposits are the only ones thus far discovered in the United States, and such deposits are nowhere abundant, so far as is known. Bauxite is used for the following purposes: the manufacture of aluminum; the manufacture of the highest grades of refractory materials, and for increasing the refractoriness of fire-clays; and the manufacture of the highest grades of alum and aluminate of soda used in dyeing and calico printing.

The Arkansas kaolin deposits occur in the same counties as the bauxite and also in Pike and Ouachita.

The Ouachita County kaolin deposits form regular beds interstratified with other tertiary rocks. One important bed has been examined, which has a thickness of more than 12 feet, the entire thickness not having been seen. The outcrop of this bed is exposed at but few places, but it is probably several miles in length.

The true nature of this material would hardly be suspected from its general appearance, or from an analysis of it as it comes from the ground, for it resembles a sandy clay. With the sand washed out, it is found to have the same composition as some of the best kaolins. The following is an analysis of the Ouachita County kaolin after the greater part of the sand has been removed. An analysis of a washed sample of Pennsylvania kaolin from Brandywine Summit is given for comparison:

	Ouachita County kaolin.	Pennsylvania kaolin.
Silica	48·02	47·24
Iron (ferric) oxide	1·74	1·94
Alumina	36·52	37·27
Water	13·40	13·62

The Pike County beds, so far as prospected, are too thin and too much iron-stained to be of value.

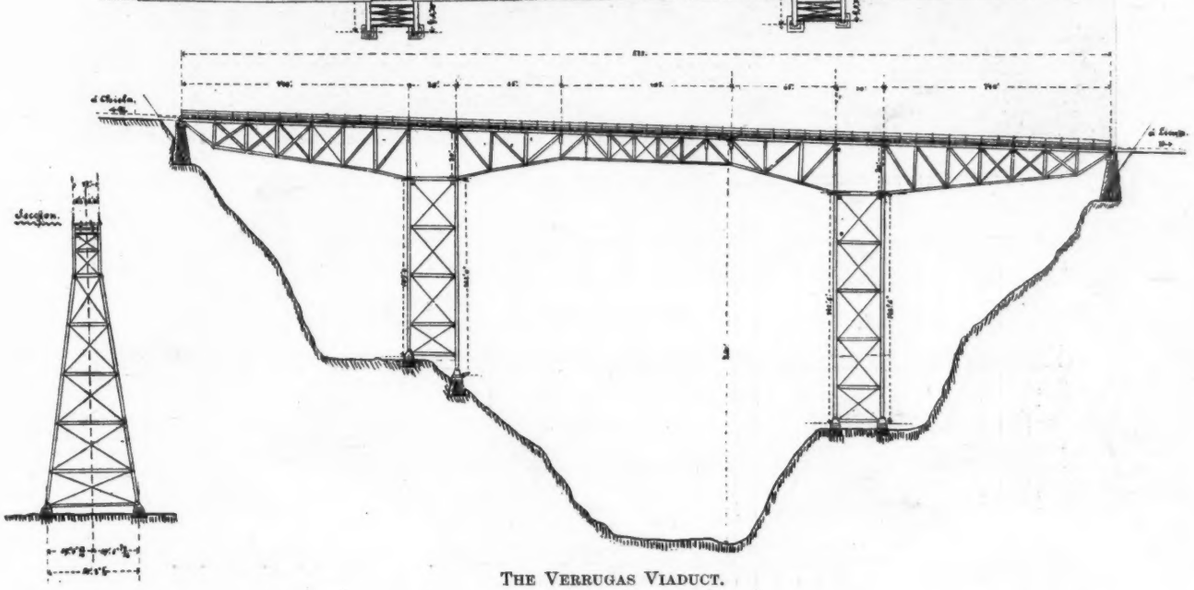
SMELTING AND REFINING IMPORTED ORES AND CRUDE METALS IN BOND.

Under date of January 8th, 1891, the Secretary of the Treasury has issued regulations, as prescribed under the provisions of Section 24 of the act of October 1st, 1890, for the smelting and refining of imported metals in any crude form in bonded warehouses. They are as follows:

Application for the establishment of warehouses for this purpose must be made by the manufacturer or owner, to the chief officer of the customs at the port where their smelting or refining works are situated, setting forth the manufacture proposed to be carried on therein. Such manufacturer or owner will be required to execute a bond, in duplicate, in a prescribed form, in such penalty and in such security as the Collector of Customs may deem proper. All bonded warehouses of this class shall have a portion separated from the remainder of the premises, and secured by customs locks, for the storage of the refined product equal to the quantity of pure metal contained in the imported crude metal or ore used in the smelting and refining each day until withdrawn for exportation or consumption, or transportation to another bonded warehouse. Upon the arrival of metals in any crude form, including ores, from a foreign port, at any port where such smelting or refining warehouse is situated, for the purpose of being smelted and refined, the same shall be entered for warehousing under Articles 667 to 674 of the General Regulations of 1884. And upon the receipt in warehouse, the appraiser shall obtain proper samples from those taken for commercial purposes, in the manner practised by miners and others, in the handling and reduction of ores and metals, by thoroughly mixing and quartering every tenth shovel or more, and will ascertain by proper assays the quantity of dutiable refined metal or metals contained in the crude metals or ores as entered. Upon a withdrawal for consumption in the United States of any refined dutiable metals set aside and stored as equivalent for the metals contained in the imported crude metals or ores smelted in such warehouses, duty will be collected on the corresponding quantity as shown by the original assay, of such imported crude metals or ores, without any allowance for wastage incurred in the smelting and refining, but upon the exportation of said refined metal credit will be given on the warehouse bond for the duties on such corresponding quantity of the imported crude metals or ores shown by the assay, and 10 per centum of the quantity so shown in addition thereto.

In order to directly export refined metal, the manufacturer will file with the Collector of Customs an export entry, as provided in Article 776 of the said Regulations, who will issue a permit (Article 779) directing the storekeeper to deliver the goods to the Surveyor to be laden for exportation on board the export vessel, car, or other vehicle, and the Collector will credit the warehouse bond with the amount so exported.

In order to export refined metal *via* some other port in the United States, the manufacturer will file with the collector of customs where the manufacturing warehouse is situated, a transportation and exportation entry, and execute a bond, according to form, in a penal sum equal to double the value of the goods with the duty added. A manifest, duly certified, together with a copy of the entry, will be mailed to the chief officer of the customs at the port where the goods are to be transshipped for exportation. On arrival of the goods at said port the transportation line shall deliver the manifest to the chief officer of the customs, who shall examine the packages, and compare with the manifest and entry, and, if found correct, he will deliver the goods for exportation, and issue a certificate. On the receipt of this certificate the Collector of Customs at the port of withdrawal will cancel the export bond. Upon the importation of metals in a crude form at any port of the United States, which are not designated as ports of entry for goods entitled to be entered for immediate transportation without appraisement, consigned to a manufacturer or owner of a bonded smelting and refining warehouse, situated at some other port of entry or delivery, the same may be entered for warehouse and transportation in the manner prescribed by Articles 751 to 757 of the General Regulations, except that the appraisement may be waived, and the entry made on the estimate of the duties, and the goods, after official ascertainment of weight, permitted to proceed to their destination, the entry to be ultimately liquidated under an appraisement by the office at the port where such manufacturing warehouse is situated. In case the operations of smelting and refining cannot be carried on in a single establishment, the bonded warehouse shall be designated as a smelting warehouse, and the unrefined products, or bullion, obtained from the smelting of crude metals or ores in such warehouse may be removed therefrom for shipment to any refining works upon the payment of the duties on the quantity of crude metal or ore contained in the imported mass used in the smelting; or upon the production of a certificate from a Collector of Customs at a seaboard port, showing that a quantity of dutiable refined metal equal to 90 per cent. of the quantity indicated by the original assay has been actually exported by the owners of the bonded smelting warehouse or their agents, and credit for the full amount of the duties charged on imported ore or crude metal used in the production of the bullion so withdrawn and shipped for refining will be given on the warehouse bond.



THE VERRUGAS VIADUCT.

GEMS AND PRECIOUS STONES.

The *Courant*, of Hartford, Conn., in a recent issue says: Those who take pleasure in the art of bookmaking on its mechanical side should have an eye for a work entitled "Gems and Precious Stones of North America," being a popular description of their occurrence, value, history, archæology, and of the collections in which they exist, also a chapter on pearls and on remarkable foreign gems owned in the United States. The writer is George Frederick Kuntz, who is a gem expert with Tiffany & Co. The book, a large quarto in size, is printed in handsome type on heavy paper, is sumptuously bound, and is adorned with numerous fine engravings and with a number of colored plates by the lithographers Prang & Co., which are quite the most beautiful examples of the kind we have ever seen.

Entirely apart from attractions of printer and publisher, this work is a unique, interesting and valuable one. The author is well equipped for his task, and while he makes the subject plain and popular, he does not neglect its scientific aspect, and much information on jewels from the mineralogical point of view is intermingled with alluring stories of historic gems and useful exposes of newspaper and other canards respecting bogus precious stones and the alleged fabulous riches found in western mines. An excellent feature of the book is the enumeration of practical tests by which diamonds and other gems may be at once declared true or false. The topography of the subject is discussed, by states, and the ground thoroughly covered in the United States, Canada and Mexico. The book thus appeals to the general reader, for whom the story of gems and jewels has always a fascination akin to that exercised by magic feats and wonder tales, and to the more sober student in search of facts and historical data. It is published by the Scientific Publishing Company, of New York.

Detection of Titanium and Cyanogen.—C. Lüdeking proposes the following method in the *St. Louis Acad. of Science:* The compound, $3Ti_3N_2 + TiCy_2$ (which is often found in iron furnaces on smelting titaniferous ores), may be formed in the inner flame of a Bunsen burner, which is made slightly luminous by a proper regulation of the supply of air. On account of the characteristic appearance of this compound very small quantities of titanic acid can be quickly detected. The substance in question is dissolved in a little sodium carbonate in the loop of a thin platinum cone, and all the sodium is volatilized in the inner flame. If titanium is present, the above-named coppery red compound is formed, and may be easily recognized on the platinum wire. Inversely the reaction serves for the detection of cyanogen in flames.

THE ORE DOCK OF THE DULUTH, SOUTH SHORE AND ATLANTIC RAILWAY COMPANY AT MARQUETTE, MICH.—III.

Written for the Engineering and Mining Journal.

(*Continued from page* 91.)

The floor of the dock, as stated in Part II. of this article, is divided in half. Each section is laid with a three-rail track. The arrangement of these rails (see Figs. 7 and 8) is such that the middle rail does double duty, thereby affording for each pocket, on either side of the center rail, a dumping space of 3 feet 9 inches by 11 feet. The relative position of the Union hoist and counterbalance, described in detail in our issue of January 17th, is shown in Fig. 8. The dock was framed and raised much after the manner followed in constructing the skeleton of a frame building (see Fig. 10). The dock as it stands to-day is shown in Fig. 11. It extends from the shore adjacent to the business portion of the city of Marquette into the harbor in a line parallel with the Ridge—a very desirable residence portion of the city—its east side facing Lake Superior and its west the other docks of the railroad company.

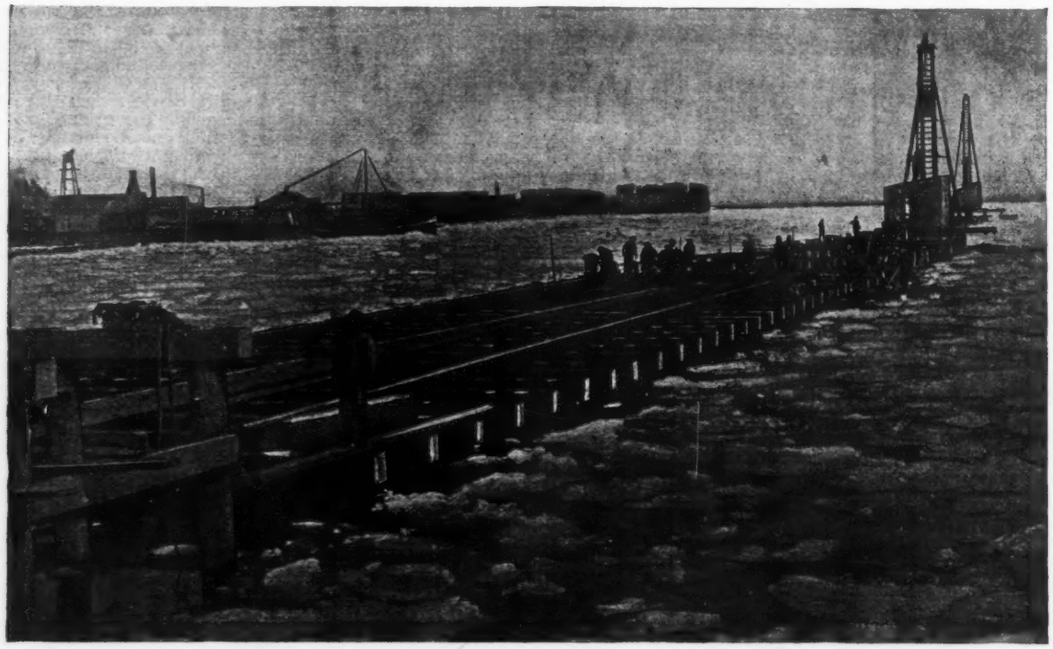


FIG. 9.—DULUTH, SOUTH SHORE & ATLANTIC RAILROAD COMPANY'S ORE DOCK, MARQUETTE, MICH.

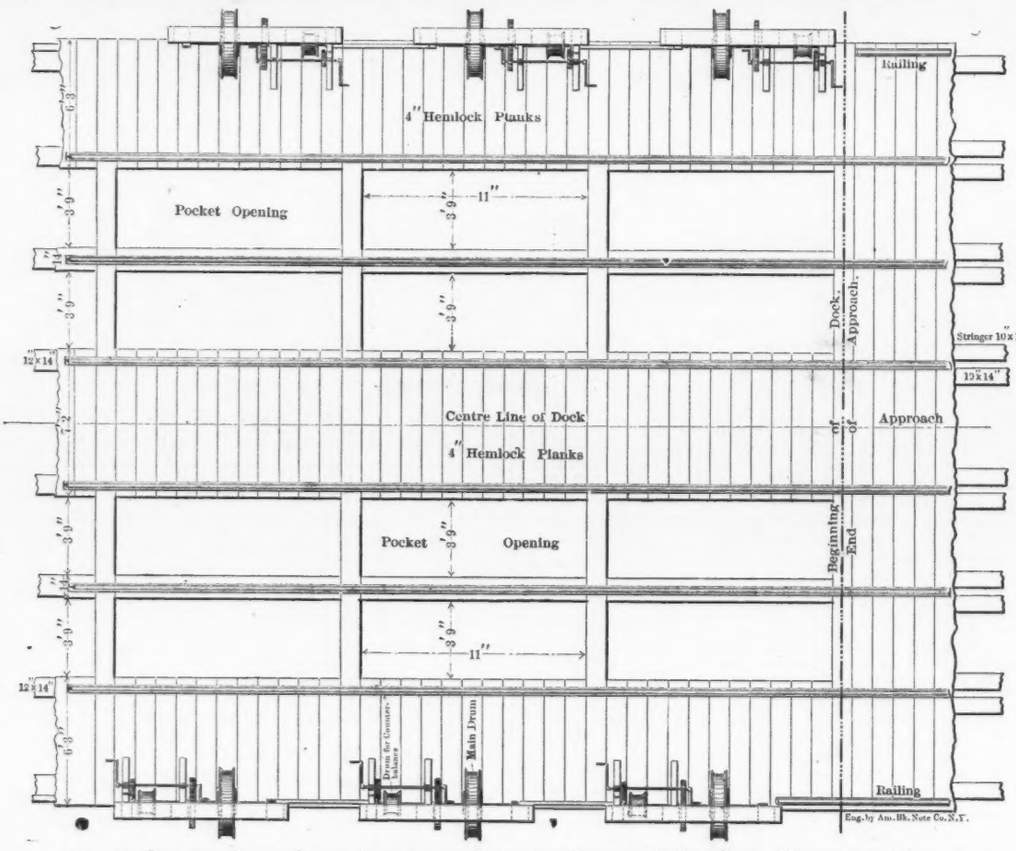


FIG. 8.—DULUTH, SOUTH SHORE & ATLANTIC RAILROAD COMPANY'S ORE DOCK, MARQUETTE, MICH.

The board of trustees of the Brooklyn Bridge met on Wednesday last, and adopted the recommendations of the Board of Experts, substantially as submitted in their report of a fortnight since. The only points undecided were those embodied in the sixth and ninth suggestions, regarding the purchase of certain pieces of land at the Brooklyn and New York terminals.

TIN IN CENTRAL TEXAS.

Written for the Engineering and Mining Journal by Dr. Theo. B. Comstock.

Less than two months ago, in the course of my investigations upon the Geological Survey of Texas, I made a discovery which may, perhaps, prove of the highest commercial importance to Texas and the whole country as well. The announcement made officially to Mr. E. T. Dumble, State Geologist, and made public by him, has already acquired by the process of newspaper circulation certain accretions for which I do not desire to be quoted as authority.

The facts in the case are these: The existence of tin-bearing ores in this State has been claimed with persistence for a number of years. Although much material has been sent to various mineralogists for examination, and occasional newspaper accounts of the discovery of the metal have been published, there was no instance on record of what proved to be actual discovery of more than mere traces in rare and obscure minerals until I announced in 1889 that I had received a small crystal of cassiterite, or tin oxide, from a resident of Llano County.*

I then remarked :†

"Because of the receipt of a very fine crystal of *cassiterite* (tin oxide) from a gentleman who did not seem to know its nature, and who stated that it came from the stream 'wash' near the point where he gave it to me, I have taken much pains to search for tin ore. Failing to get reactions for this metal in any of the minerals of my own or my assistants' collections, Mr. Huppertz was especially charged with the examination of the locality referred to above and of the adjoining region, in the hope that more of the same material might be found; but the quest has been fruitless. The area is an extension of the Barringer tract, and one not unlikely to yield tin minerals if they exist at all in the Central Mineral Region."

Further investigations in the field in the summer of 1890 resulted in the conclusion that nothing in the shape of tin ores was likely to be found in Texas.

In the work of determining minerals in the laboratory, however, last November my attention was called to some former collections made for the survey, which were turned over to me for study. Some of these specimens came from Barringer Hill and others from a locality in Mason County, which I had not then been able to examine critically for lack of time. The occurrence of tungsten and niobium in these at once became noteworthy, and finally I found a large inclusion of cassiterite in quartz. At this juncture I made a special trip to the region and spent a week in the thorough examination of most of the tract theretofore neglected. The result was the verification of reports previously made to me by Mr. George Durst regarding the existence of relics of furnaces and excavations made at some former period. It had been claimed that the slag from the furnace in one place contained globules of silver, and I collected as much of this material as possible. Careful examination of this has since proven that the metallic inclusions are invariably tin, and not silver; and the whole of the slag carries abundant traces of tin. A detailed description of this occurrence and of the geology of the district, including important facts relating to remarkable ore-belts in that region, has been prepared for publication in the Second Annual Report of the Geological Survey of Texas. I am permitted by the State Geologist to give the readers of the ENGINEERING AND MINING JOURNAL a summary of the results and conclusions reached to date, with a statement of the mining problems involved in the situation. I can state, definitely, that cassiterite exists in the central mineral district of Texas, in several localities, but it is not true as reported in certain newspapers that it has been found "in 60 places, with new discoveries daily." The fact is, not one instance is yet known in which the mineral certainly occurs in workable proportions. The forthcoming report of the Geological Survey will so clearly indicate the positions and courses of the tin-bearing rocks and their exposures that intelligent prospecting for workable deposits can be undertaken. The structure, relations and distribution of the tin-bearing deposits have already been definitely ascertained.

There is likely to be some confusion in the district on account of the occurrence of a number of minerals somewhat similar to cassiterite in general appearance. Black garnet and tourmaline can, of course, be easily determined, but there is the mineral keilhauite (Ittrotitanite) which often resembles it so closely that a determination of specific

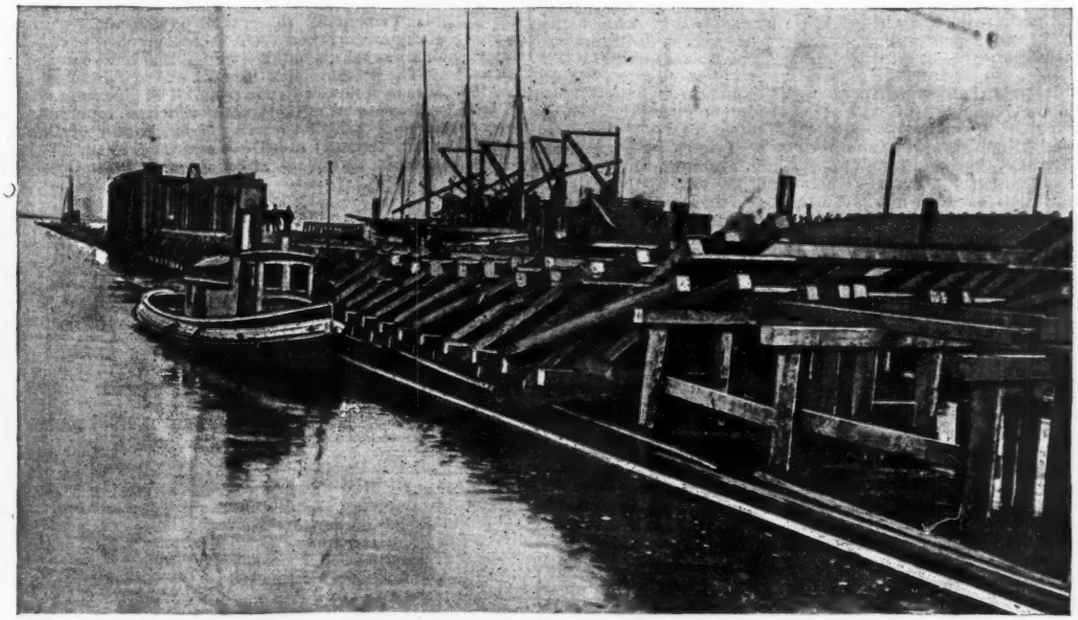


FIG. 10.—DULUTH, SOUTH SHORE & ATLANTIC RAILROAD COMPANY'S ORE DOCK, MARQUETTE, MICH.

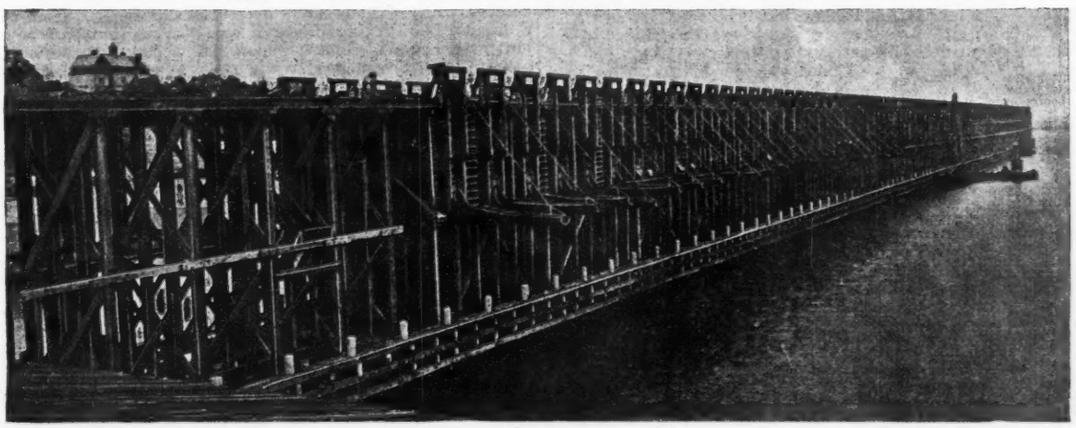


FIG. 11.—DULUTH, SOUTH SHORE & ATLANTIC RAILROAD COMPANY'S ORE DOCK, MARQUETTE, MICH.

*A. R. Roessler's map of Llano County, 1875, gives a locality of cassiterite in Southwest Llano County. Diligent search in that region has been unfruitful, and the geology of his reported area is unlike any in which I have yet found the tin ore. The spot indicated upon his map is not within 20 miles of the nearest outcrop of the belt here referred to.

† Preliminary Report on the Geology of the Central Mineral Region of Texas. By Theo. B. Comstock. In First Annual Report, Geological Survey of Texas, 1889. E. T. Dumble, State Geologist, p. 345.

gravity and blow-pipe tests are absolutely necessary. All the foregoing minerals occur in the same districts and nearly identical situations.

The details regarding the occurrence of the tin ores have been worked out with much care and labor, and we are now able to postulate the conditions with nicety. However, this cannot be done in this place for want of such maps and sections as have been constructed under my direction for publication in the report aforesaid. The complexity of structure has involved in difficulty not a few who have essayed to attack the mining problems without competent engineering guidance, and it is hardly to be expected that cautionary advice will be heeded by the inexperienced, but it may possibly do some good to give a hint of the danger from guess-work and unsystematic prospecting in such a disturbed area. This I shall attempt by a brief review of the geology of the area so far as it affects the outcrops of the rocks which may carry tin ore and the possibility of their existence in tracts where they are not exposed.

The system of strata in which the tin occurs is the oldest Archean, or what will possibly be best understood under the name Laurentian, for which we have adopted the provisional title Burnetan in the Survey reports. This well-pronounced terrane in Central Texas is made up of gneisses, graphic, granite and schistose rocks which have in large degree undergone processes of replacement, or mineral alteration, until they are not only much disintegrated, often to depths of many feet, but also rendered largely structureless and even textureless, so far at least as to afford but little evidence of their original condition. In and through these, however, persistently trending across wide areas, though much broken by later uplifts, there are belts, or bands, of quartz and other material which are highly charged with minerals of the rarer kinds. Interesting compounds of cerium, yttrium, thorium, tantalum, niobium, uranium, tungsten and metals of more ordinary ilk, in rare combinations are very abundant.

Usually a distinctive feature marks each belt, and there is some evidence of a system of folds, or of parallel axes, several times repeated longitudinally across the Burnetan tract, in a course N. 75° W. by S. 75° E. In many places, which have been for the most part mapped, the rocks of more recent date have been thrown across these basal members in such a manner as to bury or to blot out by cross-trends the readily determinable physiognomy of the earlier strata. In other cases, the erosion products and the local decomposition of the Burnetan strata have even more completely obscured their own structural features, so that it is impossible for one not thoroughly familiar with the whole region to trace the connection from outcrop to outcrop. But, by means of methods well known to geologists and mining engineers, it is feasible to piece out the shattered mid-rib, and to show clearly the natural relations of the disconnected links. Thus I have found that a belt of garnet, for instance, or of tourmaline or keilhauite, which may appear in one part of the district, is represented by equivalent and usually identical bands in the continuation of the characteristic Burnetan trend in other areas. Knowing this fact, which becomes more apparent with closer study, and leaving the characteristic associated minerals it is plain that, where several interrupted bands thus run parallel across the whole district, the discovery of one may serve as a guide in the search for others. Were now the tin ore a constituent of all the belts, and non-persistent, there would be no means of plotting its loci without including large doubtful areas which could only be proven pro or con by expensive explorations But if, on the other hand, one or another band only be tin-bearing, and that on almost free from minerals which might be confounded with such ore, then the mining or prospecting problem is much simplified. This last condition is that which exists in this field, and it plainly indicates that a knowledge of the structural geology and of the facts now well determined by the Survey are necessary for intelligent and systematic prospecting.

The Central Texas tin field, as at present outlined by the writer's discoveries, passes through the middle of the Burnetan trough or basin, with an apparent tendency to a repetition along the northern border, and, more doubtfully, in a southern belt also. But, in the localities from which good specimens have been taken, there are, practically, no other minerals which ought to be mistaken for cassiterite by any observant person who has first seen that ore. I have not yet found a trace of tin directly in the black garnet belts, although a band of cinnamon garnet, wholly unlike our brilliant black tin ore, and one of vesuvianite serve as fairly good parallel pointers, or land marks, from which to prospect northward. None of the keilhauite thus far examined has yielded a trace of tin. It lies in belts passing south of the cassiterite tract. The samples of supposed cassiterite heralded in the newspapers prematurely as coming from this belt have been mostly of this character. Allanite, gadolinite, and a host of minerals containing the rare metals are closely associated with the cassiterite in distribution, but up to date I have no note of any tin with these species. Interesting as the facts are, and assiduously as our staff has worked upon them, we are only at the threshold of our knowledge. The only apology for presenting these desultory generalizations is the need of making known to prospectors everything which can help to prevent unnecessary labor and expense.

As now defined, the territory in which it may be said that tin is likely to occur comprises a tract about 10 to 15 miles in width and 50 or more miles in length, extending from western Burnet County to eastern Mason County, across the middle of Llano County. The whole of this restricted area cannot be productive, and it is probable that only a few localities will be worth prospecting. The most favorable points, judging from the knowledge thus far acquired, are in the region about Barringer Hill and westward, in Llano County, and the country about the headwaters of Herman and Willow creeks, in Mason County.

As I write, Dr. W. Von Streeruwitz, of the Geological Survey, in charge of the division of West Texas, has announced the discovery of tin and platinum ores in his district. Although the occurrences are somewhat dissimilar, there is enough parallelism in the two fields to suggest the probability of close geologic relations, which cannot be fully determined until the intervening structure has been worked out.

False Pretense.—In order to constitute the offense of false pretense, there must be secured by such false pretense either money, wares, merchandise, goods or chattels, or other valuable thing, and the procuring by false pretense of a signature to an instrument which could not be enforced against the signer, if he showed that it was obtained by false pretense, is not a valuable thing, and does not constitute the offense.

Robinson v. State, Supreme Court of New Jersey, 20 *At. Rep.* 752.

RUSSIAN OIL.

For the following letter from Mr. L. D. Galligan, the Oil Well Supply Company's agent in the Russian field, we are indebted to *The Oil, Paint and Drug Reporter*. The figures are all in poods, one pood being equal to five gallons. A kopeck is equal to ½ cents:

Inclosed I send some statistics from the Baku *Caspia* reports compiled by Gann & Koloboff. Of the oil situation generally there is not much to be said. The prices have declined from 7 to 4½ kopecks per pood, partly on account of a slight increase in production, but principally on account of the Volga having closed. Exploitation is very active, but all confined to the old territory. The producers have appealed to the government to be permitted to drill outside of former limits, and it is expected this will be granted, but unless it is no great increase can reasonably be expected in the present production.

Owing to the high price of crude and the low price of refined there is great distress among the refiners. There are some 200 refineries here, and during the last six months not more than half of them have been able to run at all. Principally those who have their own wells can afford to run. Many of the others have been compelled to run to fill contracts, but at such a loss that it will be strange if several cases of bankruptcy do not occur. The production of Russian oil from January 1st to November 1st, 1890, was as follows: Crude from all 15 pipe lines, 175,931,896; waste oil from pools, etc., 2,359,431; total production, including waste, pipe line percentage, etc., 187,926,954; Bey-be-bat (south of Baku), 16,186,435; a small adjoining territory of little importance, 920,276.

The oil product by sea was, from January 1st to October 1st, 1890:

	From Batoum.		
	Abroad.	Russia.	From Baku.
Crude oil	321,520	12,648	4,869,537
Vaseline and paraffine	.....	2,744	.....
Benzine and gasoline	.....	4,896	91,305
Illuminating	27,148,842	2,968,995	20,742,742
Astral	37,870	2,206	142,745
Lubricating, not refined	327,527	18,354	54,157
Lubricating, refined	2,321,187	215,650	446,395
Residuum	1,684,708	111,719	82,290,906
Total	31,841,654	3,337,212	108,637,787

VALENTINE'S STATISTICS OF GOLD AND SILVER PRODUCTION IN 1890.

The following is the annual report by J. J. Valentine, vice-president and general manager of Wells, Fargo & Co., of precious metals produced in the states and territories west of the Missouri River (including British Columbia) during 1890, which shows in the aggregate: Gold, $32,156,916; silver, $62,930,831; copper, $20,569,092; lead, $11,509,571. Total gross result, $127,166,410. The "commercial" value at which the several metals named herein have been estimated is: Silver, $1.04 per ounce; copper, 14 cents per pound; and lead, $4.30 per cwt.

As in former reports, allowance must be made for probable variations from exact figures, by reason of constantly increasing facilities for transporting bullion, ores and base metals from the mines outside of the Express, and the difficulty of getting entirely reliable data from private sources. Especially is such the case in the reports from Montana and Colorado. Statistics gathered in this way are liable to be exaggerated; but, with some modifications on this account made herein, the final general results reached, while only approximately correct, may be accepted as the closest approximation possible under the circumstances. No bullion or coin was received by Wells, Fargo & Co.'s Express from the west coast of Mexico during 1890.

STATES AND TERRITORIES.	Gold dust and bullion by Express.	Gold dust and bullion by other conveyances.	Silver bullion by Express.	Ores and base bullion by freight.	Total.
California	$8,605,958	$1,290,893	$670,184	$1,194,079	$11,761,114
Nevada	2,693,884	.....	4,738,020	1,808,632	9,240,536
Oregon	915,000	50,000	71,000	.....	1,036,000
Washington	161,000	30,000	85,000	.....	279,000
Alaska	.....	762,811	.....	.....	762,811
Idaho	3,595,333	.....	5,594,167	4,635,000	13,824,500
Montana	2,764,116	.....	16,921,632	15,129,207	34,814,955
Utah	88,798	.....	2,166,071	10,004,306	12,259,175
Colorado	4,210,961	.....	18,911,802	4,152,684	27,275,447
New Mexico	276,034	100,000	117,790	4,165,161	4,658,985
Arizona	1,050,486	100,000	683,565	5,763,298	7,597,349
Dakota	3,045,560	.....	.....	.....	3,045,560
Texas	.....	.....	249,423	.....	249,423
British Columbia	361,555	.....	.....	.....	361,555
Total	$27,771,685	$2,333,704	$50,208,654	$46,852,367	$127,166,410

The gross yield for 1890, shown above, segregated, is approximately as follows:

Gold	25·29	$32,156,916
Silver	49·49	62,930,831
Copper	16·17	20,569,092
Lead	9·05	11,509,571
Total		$127,166,410

The total value of gold product, in states and territories west of the Missouri river, deducting British Columbia, was $31,795,361, against $32,527,661 in 1889; silver, $62,930,831 in 1890, against $64,808,637 in 1889; copper, $20,569,092 in 1890 against $14,793,763 in 1889, and lead, $11,509,571 in 1890, against $14,593,323 in 1889.

The exports of silver during the past year to Japan, China, the Straits, etc., have been as follows: From London, $41,173,444; from San Francisco, $6,800,865. Total, $47,974,309, as against $57,654,712 last year. Pounds sterling estimated at $4.84.

The gold product of Mexico, on mintage basis, for fiscal year 1889-1890 was $1,100,000; silver, $41,500,000; total, $42,600,000.

ANNUAL FINANCIAL STATEMENTS.

The following statements, taken from affidavits filed with the County Clerk, and therefore official, show the financial standing of mining companies organized under the laws of New York State. Bankers, brokers, investors, and all who deal in, or are interested in, mining stocks will find this list, which has been especially prepared for the ENGINEERING AND MINING JOURNAL, valuable for reference. It should be remembered that the statements from which these figures are taken simply assert that the indebtedness does not exceed the amount mentioned.

Company.	Indebtedness.
Adams Prospecting Company	$200
Alturas-Senate Mining Company	1,500
American Copper Mining Company	80,000
Austin Consolidated Coal Company	100,000
Bessemer Mining Company	15,000
Bloomingdale Graphite Company	30,000
Bonanza and Union Tunnel and Mining Company	520,000
Bondholder Mining Company	6,000
Breckenridge Milling Company of New York City	6,000
Brewer Mining Company	28,000
Cagle Gold Mining Company	1,050
California Water and Mining Company	150,000
Chase Gold Company	†102,428
Chestatee Gold Company	22,000
Chicago & Georgia Mining Company	12,000
Chrysolite Silver Mining Company	5,000
Codorus Mining Company	250,000
Colonias Mining Co	125,000
Colorado Central Cons. Mg. Co.	15,000
Colwell Lead Company	56,930
Cons. Gold Mg. Co., of Ga.	26,300
Cons. Ten Mile Mg. & Red. Co.	60,000
Continental Silver Mg. Co.	6,000
Cortez Mining Co	73,691
Deadwood Terra Mg. Co	100,000
El Oro Mining Co	700,000
Empire & Silver State Silver Mg. & Mill Co	117,448
Enterprise Mg Co	4,753
Evening Star Mining Company	1,000
Federal Valley Coal Company	754,000
First National Gold Mining Co.	95,000
Gypsey Maid Cons. Mg. Co.	1,500
Gold Cup Mg. & Smelt. Co	15,000
Golden Rule Cons. Mg. Co	3,000
Gold Rock Mg. Co	50,000
Good Return Mg. Co	474
Goodwin Con. Mg. Co	§20,000
Green Mountain Gold Mg. Co.	150 000
Granite Mountain Cons. Mg. Co.	59,400
Harney Peak Tin Mg., Milling & Mfg. Co	135,000
Idaho Mg. & Irrigation Co	660,000
Iron Duke Mine	500
Iron Reduction Co	5,000
Jocuistita Mg. Co	120,000
Juniper Gold Mg. Co	8,000
Kearsarge Silver Mg. Co	5,000
Kesler Mg. Co	85,000
Kismet Cons. Mg. Co	26,500
Leadville Cons. Mg. Co	200
Lebanon Mg. Co., of New York	50,000
Manganese Iron Ore Co	80,000
Manhattan Brass Co	199,558
Manzanita Gold Mg. Co	55,000
Marshall Basin Mg. Co	10,000
Midland Mining Co	8,000
Mike & Starr G & S. Mg. Co	100,000
Mimbres Cons. Mg. Co	22,000
Morning Star Cons. Mg. Co	1,000
Moreno Valley Gold Gravel Mg. Co	110,000
Moultrie Mining Co	3,300
Mumford Mining Co	100
Negaunee Concentrating Co	50 000
New River Mineral Co	500,000
New River Mining Co	1,903
N. Y. Freestone Quarrying Co.	62,000
N. Y. & Shawnee Coal Co	180,000
Ophir Gold Mg. Co	410,000
Oriental Mg. Co	150,000
Oro Cache Gold Mg. Co	65,000
Osprey Cons. Mill & Mg. Co	3,000
Ouray Union Mg. Co	500
Peace River Phosphate Co	**215,000
Phœnix Lead Co	100
Plymouth Cons. Gold Mg. Co	10,000
Plumas Cons. Mg. Co	5,500
Radical Mg. Co	16,000
Rappahannock Gold Mg. Co	50,000
Red Bird Cons. Mg. Co	15,000
Redemption Mg. & Mill. Co	750
Resumption Mg. & Smelt. Co	100,000
San Sebastian Gold Mg. Co	275,000
Santa Juliana Mg. Co	200,000
Santa Lucia Mg. & Mill. Co	††250,000
Sarane Mg. Co	5,000
Sawtooth Mg. & Milling Co	7,000
Spring Creek & Rockerville Water & Mg. Co	5,000
St. Lawrence Marble Co	120,000
Sweetwater Mg. Co	150,000
Terrible Mg. Co	15,000
Tolima Mg. Co	2,000
Uinta Coal Co	100,000
United Verde Copper Co	10,000
Union Granite Co	1,600
Union Gold Mg. Co., of Colo.	30,000
Vermont Marble Co	1,600,000
Ward Cons. Mg. Co	1,000
Wells Rustless Iron Co	27,000
Wide West Mining Co	1,500
Wilson & Cass Gold Mg. Co	594,000
Yuba Gold Mining & Milling Co.	5,000

*This includes a bonded debt of $500,000. † Including interest. § Without interest. ** Including the bonded indebtedness. †† This includes the debenture bonds of the company. ‡ Exclusive of mortgage debt.

Reported No Indebtedness.

Blue Ledge Mg. Co.	Hanover Mg. & Mill. Co.	National Mg. & Ex. Co.
Boreel Mg. Co.	Hope Mg. Co.	Pelhamdale Land Co.
Carbonate Hill Mg. Co.	Illinois Sil. Mg. & M. Co.	Second National Gold Mg. Co., of New York & Colo.
Chemical Supply Co.	Little Chief Mg. Co.	
Gardner Mg Co.	Lucky Cuss Mg. Co.	Small Hopes Cons. Mg. Co.

Electric, Gas, Machinery, Chemical and Power Companies.

Companies.	Indebtedness.
Abendroth & Root Mfg. Co	$130,000
Backstrom Electric Light Co	2,860
Ball Electric Light Co	28,000
Belleville Boiler Co	11 000
"C & C" Electric Motor Co	173,050
Charleston Oil Co	729
Colwell Iron Works	98,882
Consolidated Gas Co. of N. Y	3,850,000
Continental Gas Engine Co	14,000
Crosby Electric Co	30,000
Equitable Gas Light Co. of N. Y.	220,000
Fort Madison Gas Co	*25,000
Hazelton Boiler Co	70,000
Hydro-Carbon Gas & Fuel Co	2,500
Lidgerwood Mfg. Co	237,000
Lugo Dynamo Electric Co	53,178
Magnolia Anti-Friction Metal Co	11,000
Manhattan Electric Light Co., Ltd	150,000
New England Electric Storage Co	8,775
New York Mutual Gas Light Co	503,670
Northern Light Oil Co	8,500
Passaic Chemical Co	59,000
Phillips Petroleum Co	500
Phœnix Powder Co	35,000
Pneumatic Dynamite Gun Co	700,000
Roessler & Hasslacher Chemical Co	123,800
Southern States Electric Storage Co	12,930
Stead Steam Boiler Mfg. Co	4,000
United States Electric Lighting Co	1,500,000
Western Oil Refining Co	1,000
Western States Electric Storage Co	18,200
Westman Furnace Co	5,000

HOWE'S METALLURGY OF STEEL.

The *School of Mines Quarterly*, in its November issue, says:

"The first edition is already exhausted; the second edition is forthcoming.

"The greater part of this work has appeared in a series of papers issued as supplements to the ENGINEERING AND MINING JOURNAL during the past two years, the present volume being a rearranged collection of these papers, with considerable additional matter.

"The great magnitude of this subject renders any thorough work on it of large size. This volume of the work contains: [Here follows an enumeration of the chapters.]

"The book is illustrated by 228 drawings and 222 tables, some of the latter meriting particular attention, being in graphic form which enables the reader to grasp at a glance the significance of comparative data.

"The masterly manner in which the author has handled the subjects treated, and his clear and comprehensive discussions, cannot fail to win for him the admiration and thanks of all consulting his work, and the endorsement which the author gives by referring to the long list of prominent metallurgists and practical workers in iron and steel, enhances its value as a work of practical importance.

"To sum up, this work is of great merit, and is heartily recommended to engineers and others interested in the manufacture of iron and steel."

VON TUNNER AND THE JUBILEE AT LEOBEN.

Our readers will remember that at the International session of three societies held at Pittsburg last October, under the auspices of the American Institute of Mining Engineers, it was announced that the jubilee of the great mining school at Leoben in Styria, and of its venerable founder and director for fifty years, Peter Ritter von Tunner, was celebrated on the 11th, 12th and 13th of that month. Further it was said that Dr. T. Sterry Hunt, as an old personal friend of von Tunner, had by the request of the committee, written a letter addressed to Dr. Raymond, which was read at Pittsburg, recommending that a telegram of congratulation from the united societies should be sent to Leoben; a proposition warmly supported by Sir Lowthian Bell and by Mr. Thielen. The text of the letter was given in this journal of October 17th, 1890, and the telegram duly sent.

We have now before us the official report of the Jubilee, at which were present the Imperial Minister of Agriculture, Count Falkenhayn, with many other distinguished personages, alike political, academic and military. The proceedings, which lasted three days, began on Saturday, October 11th, with solemn high mass, and the chanting of a Te Deum. Following this, after many speeches and words of congratulation, came the festival oration by Prof. Hanns Höfer, who is well known to many of our readers. It was a masterly review of the progress of metallurgical science in the empire from the time of Agricola, and closed with an eloquent tribute to von Tunner and his work at Leoben. Addresses by Kupelwieser and others succeeded, while in one of the intervals the students showed their affectionate reverence for the director by singing their well-known song beginning:

"Grüss ihn Gott, unsern liebern alten Peter!"

The banquet which followed was shared by about 220 guests; was enlivened with music, with excellent speeches, and the next two days were given up to concerts and entertainments worthy of the occasion. In the list of congratulatory messages received, telegraphic and otherwise, is conspicuous that from the "International Session of German and American Engineers at Pittsburg."

Dr. Sterry Hunt has received a letter from the Ritter von Tunner, of which we are permitted to give the following translation:

LEOBEN, Dec. 16, 1890.

To Prof. T. Sterry Hunt, New York City:

HONORED FRIEND: In the number of the English journal *Iron* of the 12th of this month, received to-day, I read your highly honorable mention of my insignificant work that you had the goodness to notice at the International meeting at Pittsburg on October 10th. Pray accept my heartiest thanks therefor.

In the hope that you have quite recovered your usual good health, I commend myself to your kindness and friendship, and subscribe myself with the greatest respect, Yours most faithfully, P. TUNNER.

EARLY HISTORY OF THE IRON INDUSTRY IN THE UNITED STATES.

Mr. William F. Durfee, well-known to American metallurgists as the first man who made Bessemer steel in America, at the experimental works at Wyandotte, Mich., in 1864, is contributing to the *Popular Science Monthly* a series of articles on "The Development of American Industries Since Columbus." Three of these articles, "Early Steps in Iron Making," "Iron Mills and Puddling Furnaces" and "Iron Smelting by Modern Methods," have appeared respectively in the December, January and February numbers of the "monthly." They give a very interesting description of the beginnings of the iron industry in the United States, and we take from them the following historical items:

The first mention of iron ore on this continent was by Thomas Harriot, the geographer of the second expedition to Virginia. This expedition founded a colony on Roanoke Island, but being menaced by Indians the colonists became discouraged, and returned to England in 1586.

On April 10th, 1608, the colony at Jamestown, Virginia, made a shipment of iron ore to England, and seventeen tons of iron made in England from this ore were sold to the East India Company at £4 per ton. An attempt was made in the years 1620 to 1622 to erect iron works at Falling Creek, about 66 miles above Jamestown, but on the 10th of March, 1622, the buildings were burned by the Indians and 347 persons were killed.

The first iron works built in this country that can be called successful were those erected in the Province of Massachusetts Bay, in what is now the town of Saugus, a suburb of the city of Lynn, about 10 miles northeast of Boston. These works were commenced late in the year 1643 or early in 1644. The first piece of hollow ware made in America was cast at Lynn in 1645, probably direct from the blast furnace, or possibly from a reverberatory furnace, as the cupola, for smelting iron, was not invented until 1790.

After the establishment of the furnace and foundry at Lynn, iron works were erected in other parts of New England, and thence the business spread into New York, New Jersey, Pennsylvania and Maryland. During the French war (1755) there were a number of furnaces in operation, and cannon-balls and bombs were cast in great quantity. Many of those works afterward furnished similar supplies to the Continental army during the Revolution.

No drawings of the early iron works erected in this country have been preserved. Mr. Durfee therefore describes the works in existence in Europe at that time, copying quaint illustrations of them from books published in France in the eighteenth century.

In 1731 there were in New England six furnaces for hollow ware and 19 forges or bloomaries for bar iron. There were then no furnaces for pig iron exclusively, nor any refineries for pig metal; there was one slitting mill and a "manufacture of nails." In that year there were no iron works in New York, but in New Jersey there were one furnace and "several forges." Fifteen furnaces and 30 bloomaries represented the growth of the iron industry during the 86 years following its birth at Lynn.

In 1750 there were four rolling mills or slitting mills in the colonies. In that year an act was passed in England prohibiting their further erec-

tion, and this act was zealously enforced. An instance is given, however, of a slitting mill being erected in defiance of the law at Boonton, N. J., the mill being hidden below a mill for grinding grain. From 1750 to the Revolution the iron industry was chiefly confined to the manufacture of pig and bar iron in the furnaces, forges and mills already erected and of castings from the blast furnaces.

During the Revolution one of the most notable events connected with the manufacture of iron was the making of the great iron chain which in 1778 was stretched across the Hudson River at West Point to prevent the passage of the British vessels. It was made at the Sterling Iron Works, about 25 miles back of West Point. The total weight of the chain was 180 tons.

The first rolling mill erected in the United States to "puddle" iron and roll it into bars was built at Plumsock, Fayette County, Pennsylvania, in 1816 and 1817, the puddling process having been invented by Henry Coot in England in 1784. In the early practice in this country the operation of puddling was preceded by the operation of refining, carried on in an apparatus known as a refinery. The puddling of the refined iron was done on a "sand bottom," the decarbonizing being performed by the heated air passing over the metal. Later, the "iron bottom" introduced by Samuel Baldwyn Rogers was used, and the preliminary process of refining was dispensed with.

The next improvement in puddling-furnace practice was the invention of the rotary squeezer by Henry Burden, of Troy, in 1840. The manufacture of Nasmyth's direct acting steam hammer was begun in Philadelphia in 1843.

The first successful use of anthracite for smelting iron in blast furnaces was made in 1839 at the Pioneer Furnace in Pottstown, Pa. The furnace in that year made a continuous blast for 90 days, and secured for its proprietor a premium of $5,000, which had been subscribed by citizens of the state. On July 4, 1840, the first cast was made at the furnace of the Lehigh Crane Iron Company at Catasauqua, Pa., erected by Mr. David Thomas. This furnace continued to be successfully operated with anthracite until 1879, when it was torn down.

Mr. Durfee's articles are handsomely illustrated, and written in an interesting and popular style. They will be continued in the March number of the *Popular Science Monthly*.

THE AMERICAN SOCIETY OF CIVIL ENGINEERS.

The fortieth annual meeting of the American Society of Civil Engineers was held in New York this week, beginning on the 21st inst., and was attended by some two hundred members. The first business coming before the meeting was the canvass of the vote for officers, cast previous to the session. The following were elected: President, Octave Chanute; vice-presidents, Alphonse Fteley and Charles Hermany; secretary and librarian, Francis Collingwood; Treasurer, John Bogart; directors, Charles B. Brush, Rudolph Hering, Clemens Herschel, Edward P. North, S. Whitney.

The reports of the directors were then read. Some facts from these are that the membership of the Society on January 1st was as follows: Resident honorary members 4, non-resident 3, total 7; non-resident corresponding members, 3; resident members 200, non-resident 880, total 1,080; resident associate members 17, non-resident 44, total 61; resident junior members 57, non-resident 158, total 215; making 278 resident members, 1,088 non-resident, total 1,366 members. Fellows and subscribers to the building fund swelled the whole number of persons connected with the Society to 1,456. Total additions during the year were 150; total loss of members 30, leaving an actual net gain of 120 members over last year. The transactions of the Society during the past year have been issued in two volumes, and contain 794 pages and 158 plates. The proceedings heretofore have been issued in one volume, and contain 235 pages. The library has been increased during the year by the following additions: Books and pamphlets, 322; maps, plans, drawings, charts, photographs and engravings, 178.

The president announced that the Norman gold medal, of the value of $70, had been awarded to John R. Freeman, of Boston, for a paper on "Experiments Relating to the Hydraulics of Fire Streams"; and the Rowland prize of $50 to O. Chanute, John F. Wallace and W. H. Breithaupte, joint authors of a paper on "The Sibley Bridge."

The only important change made in the constitution of the Society at the meeting was the creation of a grade of associate members, who with full members should constitute the corporate members, and professors of engineering in technical schools of high grade were added to those eligible for membership.

The usual number of papers was read. Excursions were made by members of the Society to various points in the vicinity of New York where engineering work of interest was in progress, among the places visited being the Ridgewood pumping station of the Brooklyn water-works, the new Brooklyn sewer tunnel, the Jersey City heading of the Hudson River tunnel, and Mott Haven, where the interlocking switch system and heavy masonry of the New York Central & Hudson River Railway Company were inspected.

British and Russian Coal in Turkey.—The mine owners in the collieries of the Don are said to have applied to the Russian Government for a subvention of 3,500,000 roubles, to enable them to compete advantageously with British exporters of coal to Turkey. They reckon the annual amount of the English coal imports into Turkey at about 1,300,000 tons, and they are of opinion that by the aid of the subsidy above mentioned they could undersell English merchants at Constantinople and in the Black Sea ports, and end by ousting the English coal trade altogether.

Preserving Timber for Piles.—Mr. E. A. Wallberg, in an article on the preservation of timber in *The Transit*, is authority for the statement that whatever preservative is to be applied, the timber for piles, subjected to the action of sea worms, should first be charred, so as to kill any germs near the surface, open the pores of the wood for the antiseptic, and destroy the nutritive upon which the worm lives while beginning its action. The perfectly sound condition of the piles in the Charleston wharfs after seven years of exposure proves the efficacy of this process, since untreated piles in those waters are eaten entirely through in less than two years. The Nicaragua Canal Construction Company also has given orders to char all the piles to be used in the Greytown harbor work.

Frost-Resisting Power of Stones.—Experiments on "The frost-resisting power of natural and artificial building stones" have been made by Mr. Bauschinger, as stated in the *Journal of the Society of Chemical Industry*, with 21 different kinds of natural building stones, three to six test pieces of each being used. Their tensile strength, dry and wet, their capacity for absorbing water, their alteration in volume, tensile strength and behavior toward water after freezing and thawing 25 times, and their specific gravity, were determined. Out of this number of samples, ranging from limestone to sandstone, only six were found to resist repeated freezing, viz., one of dolorite, one of diorite and four sandstones. Four other samples were found to resist freezing fairly, but not absolutely; but of 41 samples of artificial stone similarly tested, only three were found thoroughly unaffected, while eight proved fairly resistant.

Preserving Hemp Ropes.—In order to insure greater strength in ropes used for scaffolding purposes, particularly in localities where the atmosphere is destructive of hemp fiber, such ropes should be dipped, when dry, into a bath containing 20 grains of sulphate of copper per liter of water, and kept in this solution some four days, afterward being dried; the ropes will thus have absorbed a certain quantity of sulphate of copper, which will preserve them for some time both from the attacks of animal parasites and from rot. The copper salt may be fixed in the fibers by a coating of tar or by soapy water, and in order to do this the rope is passed through a bath of boiled tar, hot, drawing it through a thimble to press back the excess of tar, and suspending it afterward on a staging to dry and harden. In a second method the rope is soaked in a solution of 100 grams of soap per liter of water.

Changes in the Terrestrial Axis.—At the autumn meeting of the International Conference on Degree Measurement, lately held at Freiburg, it was reported that a series of simultaneous observations carried on at Berlin, Strasburg and Prague, showed that a decrease in latitude was in progress, at least in middle Europe, and a similar phenomenon had been noted in other places in Europe. This implied an alteration in the direction of the earth's axis. That is, the poles and equator, latitude and longitude, are not, as usually assumed, practically fixed data. The amount of ascertained decrease of latitude at the end of the six months' period from August, 1889, to February, 1890, was half a second. It was stated at the conference that the Berlin observations for the half year ending last August showed an increase of latitude amounting to 0·4, or two-fifths of a second. The fluctuation of the axis is thus due to a minute oscillation, probably owing to some changes in the internal mass of our planet, and not to be confounded with the precession of the equinoxes.

The Pan-American Railroad.—According to a Panama correspondent of the *South American Journal*, the Pan American railroad of the future is gradually becoming less theoretical. Another link in the iron band is being welded by the construction of the Cauca railroad, for which Mr. James L. Cherry holds a concession, which provides that he shall immediately begin and complete within four years the construction of the first section of 100 miles, from Buenaventura to Cali. The government makes over to him the section of 15 miles already built, together with all the rolling stock, etc. Should the work be completed before the elapse of the stipulated four years, the government guarantees a bonus of land for each month short of the time. It also guarantees a payment of 5% interest per annum on an outlay of $38,000 American gold per kilometer, extending over a period of 18 years. The second section, which will run from Coli to Manizales, will be about 250 miles long. For this the government guarantees an interest of 4½% on an outlay of $38,000 per kilometer. This section will not be begun, however, until the necessity of its construction shall become patent in the judgment of the contracting parties. Once started, however, the section must be completed within six years.

Ferroid, a New Artificial Stone.—Mr. Herman Poole describes in the *Journal of the Association of Engineering Societies* a new artificial stone, which is a compound, partly chemical and partly mechanical, of iron, sulphur and silicon, with more or less foreign matter. It is mainly a supersaturated solution of iron the sulphur with the silica acting as a binder and hardener. In normal color is a dark slate, varying somewhat with the manner in which it is dressed, but the color can be somewhat modified by the introduction of pigments. Successful imitations of various colored brick and sandstone have been made. It is about the hardness of ordinary bluestone and can be worked by the usual stone cutting tools, turned in a lathe or planed. The tensile strength is from 650 pounds to 1,200 pounds per square inch and under compression it endures from 9,000 pounds to 12,000 pounds. Its specific gravity is about 2·6. It melts at about 300° Fahr. very slowly. It does not deteriorate under exposure to the weather. As it can be melted and moulded, it is applicable to a great variety of uses to which stone cannot be put, and particularly so for large castings, such as pipes for sewage, etc. Architectural forms can be very conveniently made from it in position if needed. For culverts and bridge foundations, the perfect smoothness, of which the surface is susceptible, is advantageous in lessening water friction.

PATENTS GRANTED BY THE UNITED STATES PATENT OFFICE.

The following is a list of the patents relating to mining, metallurgy, and kindred subjects, issued by the United States Patent Office:

TUESDAY, JANUARY 20TH, 1891.

444,833. Apparatus for Refining Oil. Benjamin N. Hawes, Toledo, Ohio.
444,855. Portable Electric Welding Apparatus. Elias E. Ries, Baltimore, Md.
444,904. Steam Engine. George C. Pyle, Indianapolis, Ind., Assignor to the National Electric Head Light Company, same place.
444,919. Rope Transmission of Power. Thomas S. Miller, New York, N. Y.
444,926, 444,927, 444,928, 444,946. Method of Electric Welding. Elihu Thomson, Swampscott, Mass., Assignor to the Thomson Electric Welding Company, of Maine
444,959. Steam Boiler. John O. Maquire, Milwaukee, Wis.
444,984. Boiler Furnace. Samuel Porter, Denver, Colo.
444,997. Process of Treating Zinc Ores. William West, Denver, Colo., Assignor of one-half to Joseph H. Clemon, same place.
445,015. Oil Burner. John H. Graham, Warren, Pa.
445,038, 445,039. Rotary Steam Engine. Samuel G. Brosius, Columbus, O.
445,056. Process of Melting Iron. Arthur Greiner, Chisnovoda, Austria-Hungary.

PERSONAL.

Mr. Ernest Vincens, mining engineer, of France, passed through New York on his way to Mexico, where he has gone in the interests of Messrs. Rothschild & Co.

Mr. E. E. Olcott, mining engineer, of this city, left for East Tennessee on the 23d to examine coal and iron lands, from which point he will proceed to Sinaloa, Mexico. He can be addressed at 101 Pearl street, New York.

The 10 architects who are drawing plans for the World's Columbia Exposition buildings have organized by electing Richard M. Hunt, of New York, president, and Louis H. Sullivan, of Chicago, secretary. Each member of the board will be paid $10,000 by the directory.

The Finance Committee of the Senate, on the 20th inst., directed favorable reports to be made upon the nominations of Nathaniel P. Hill, of Colorado; Lambert Tree, of Illinois, and William A. Russell, of Massachusetts, to be commissioners to consider the establishment of an international coin or coins, as recommended by the International American Conference.

Mr. J. A. Porter, Mining Engineer executive adviser of the San Juan Smelting and Mining Company, has removed from Durango, Colo., to Denver, and in addition to his present duties assumed those of president of the Union Consolidated Mining Company, Smuggler Mining Company and Porter Coal Company.

Mr. Charles Clark, of St. Louis, who is prominently connected with the Granite Mountain Bimetallic and other mining enterprises, passed through St. Paul, Minn., recently en route for Port Arthur via Winnipeg. He is accompanied by Mr. Charles Kaufman, of St. Louis, who is connected more or less with Mr. Clark's business enterprise as a mining engineer.

Mr. William Cuthbert, employed by Captain Symons, United States engineer, to make a survey of the Snake River from Huntington to the Seven Devils mining district, Idaho, has returned to Portland. He passed down the river from the rapids below Huntington to the terminus of the Kleinschmidt road, which leads to the Seven Devils mines, a distance of 66 miles. The different reefs of rock which form obstructions to navigation have been located, and although it will be quite difficult to clear the river, it is not deemed so much so as was anticipated, and when the work is once done it is thought a good and permanent channel will be secured.

A committee of the Deutscher Verein Eisenhüttenleute waited upon Mr. Phelps, the American Minister, at the legation, in Berlin, last week. Herr Thielen, manager of the Phoenix Iron Works, and Herr Rubrort, Chairman of the Committee, referred to the recent visit of the members of the society to America, in response to the invitation of the American Institute of Mining Engineers. They said they were welcomed everywhere and were overwhelmed with hospitality. They would never forget the pleasant, instructive days they had passed in the United States. Desiring to give some tangible sign of their gratitude, they asked Mr. Phelps to be the medium to present three silver goblets to Dr. R. W. Raymond, Mr. William P. Thimm and Mr. Charles Kirchhoff, upon whom had chiefly devolved the hospitality accorded the German delegates. Mr. Phelps expressed thanks on behalf of the Institute. He afterward gave a dinner to the committee. A. Dusseldorf, artist, designed the goblets. They are shaped like Bessemer distributors, and are hung on swivels. They are curious and unique.

OBITUARY.

Baron Geraldo F. da Santos, of Lisbon, Spain, died at Urbana, O., on the 17th inst., aged fifty-nine years. He was said to be on his way to Colorado and New Mexico to invest in mines. Baron da Santos was formerly connected with the Portuguese Legation in Washington, and then became Secretary to the Minister of Finance in Lisbon. He was largely interested in the Rio Tinto and other Huelva copper mines.

John Wendel Root, supervising architect of the World's Fair, died at his home, Chicago, Ill., on the 15th inst. He was the junior member of the firm of Burnham & Root, architects, and was one of the well known architects of America. The Rookery, the Rialto, the Phenix, the Insurance Exchange, the Art Institute and the Rand-McNally buildings in Chicago are among the most recent of his works.

Justus Wolff, Ph. D., died at Union Hill, N. J., on the 10th inst., aged 54 years. Dr. Wolff was born in Bavaria, 1836. Among the people of renown with whom he early came in contact on behalf of his scientific, specially chemical, pursuits, may be mentioned Ohm at the Polytechnic School at Nuremberg, Baron Liebig and Fresenius. His attention was attracted to the aniline industries as carried on in Switzerland, Germany and England, and he discovered nigrosine and the first fast yellow to work without a mordant, besides inventing photographic processes for transferring patterns upon fabrics. He came to the United States about ten years ago, and was instrumental in saving several millions for the government in a suit against certain importers of aniline colors. He was for several years associated with Seabury & Johnson in the production of hydronaphthol, one of his latest and most important discoveries, and investigated, with a view to their perfection, the processes for obtaining metallic aluminum. Chemical literature owes many valuable contributions to his pen.

SOCIETIES.

The "Original Forty-niners" held its second annual reunion at the Revere House, Boston, Mass., on the 17th inst. The organization is composed of the pioneers who left New England for the "land of the setting sun" at the time the California gold fever was raging. About one hundred members were in attendance.

The semi-annual alumni meeting of the Stevens Institute of Technology was held in Hoboken, N. J., on the 20th inst., and was attended by about 100 of the Alumni. The meeting was presided over by Mr. William Kent, '76, alumni trustee of the Institute. Among the invited guests were: Messrs. Horace See, G. H. Babcock, and Oberlin Smith, past presidents of the American Society of Mechanical Engineers; M. N. Forney, C. J. H. Woodbury, William H. Wiley, Col. E. A. Stevens, and others. An address was made by the Chairman on the subject, "Should the technical college course be increased from four years to five years," which was afterward generally discussed in the meeting. The subject was left unsettled, but the discussion was lively, and took a wide range. After the meeting a visit was made to the mechanical laboratory of the Institute, where lubrication tests were in progress.

The Canadian Society of Civil Engineers held its annual meeting at Montreal, on the 15th inst., and was well attended, the president, Sir C. Gzowski, in the chair. After adopting the report of the council, the election of officers was proceeded with, and resulted as follows: President, Sir C. Gzowski; vice-presidents, Messrs. J. Kennedy, E. P. Hannaford, T. J. Lynch, H. F. Perley; treasurer, Mr. H. Wallis; secretary, Mr. H. T. Bovey; librarian, Mr. F. Chadwick; council, Messrs. P. W. St. George, W. T. Jennings, F. F. R. Brown, H. N. Ruttan, K. W. Blackwell, F. N. Gisborne, E. A. Hoare, Jos. Hobson, Sir J. Trutch, T. Monro, P. A. Peterson, W. P. Anderson, J. D. Barnett.

On the morning of the 16th the members visited the Victoria bridge and workshops of the Grand Trunk Railway, the Canadian Pacific railway bridge at Lachine, and the Dominion Bridge Company's works.

INDUSTRIAL NOTES.

The Standard Metal Manufacturing and the Belting Electric Motor companies' extensive works at Chicago, Ill., were burned on the 20th inst.

It is reported that the employés of the Bethlehem Iron Company, in Bethlehem, Pa., have been informed of a reduction of wages of 10% after February 1st. Depression in the trade is attributed as the cause.

The Cowles Electric Smelting and Aluminum Company, of Lockport, N. Y., according to telegraphic dispatches, has filed papers in a suit against the Pittsburg Reduction Company, Pittsburg, N. Y., for infringement of patents.

The old Donoughmore furnace, which has become a landmark among the iron industries of Lebanon, Pa., and vicinity, has been blown out after a wonderful record of five years' constant blast. The furnace is to remain idle for some time.

Norton Bros., of Chicago, Ill., have sent us a can made from the first American tin plate, under date December, 1890. It is a good piece of work, and is visible evidence of the fact that tin plate can be made in this country. We hope by another year, however, to receive a sample bearing the legend "plated with the first American tin."

The Washburn-Moen Company, which controls all of the barbed wire patents, has abandoned its plant at South Chicago, Ill., according to reports, and has purchased a tract of 250 acres for the purpose of erecting a plant at the northern suburb of Waukegan, Wis. It is given out that the shops, capable of accommodating 4,000 employés, will be located there.

The Northern Iron Furnace, located at Marquette, Mich., went into blast on the 16th inst. The stack is 50 feet wide, with a 10½-foot bosh. The capacity is about 50 tons per day. Winthrop, Marquette and No. 1 Lake Superior ores will be used. Charcoal will be used as a fuel. The flux comes from Palms Station. Car-wheel iron will be the principal product, the intention being to run the furnace on Nos. 2, 3 and 4 grades.

The Berlin Iron Bridge Company, of East Berlin, Conn., are just completing the new iron and concrete bridge on Broad street in Stamford, Conn. The bridge is of two spans of 60 feet each, with a 30-foot roadway and two 6 foot walks. The roadway is made of iron buckle plate and concrete, with asphalt pavement. The same company have also just completed the iron roof over the new casting shop of The Montgomery Iron Company, at Port Kennedy, Pa.

The directors of the Mount Carmel Airship Company held a meeting at the Grand Pacific Hotel, Chicago, Ill., and ordered an assessment of 10% on the $20,000,000 capital stock. The projector, Mr. Pennington, is reported to have said that the action was in good faith, and that the $2,000,000 is to be paid in without delay and used for construction purposes. The 30-foot model, now at the Exposition Building, is being put together, he says, and will be exhibited within a day or two. See ENGINEERING AND MINING JOURNAL January 10th.

The Metropolitan Traction Company of New York City, it is stated, will begin cabling Broadway as soon as possible. The steel conduits, castings and the other iron work are now being made at the company's works. The work will be carried on from both ends of the route toward the center—that is, from Fifty-ninth street and the Battery. The company will also erect an eight-story building at the corner of Broadway and Houston street. The basement will be used for the company's power plant, while the rooms above will be devoted to manufacturing and office purposes.

The Wagner Palace Car Company has won a temporary victory over the Pullman Palace Car Company in the decision rendered by Judges Gresham and Blodgett on a motion to restrain the Lake Shore & Michigan Southern and Michigan Central railroad companies from infringing a patent issued to George M. Pullman May 14, 1889, for solid vestibule connection for cars. In a recent case before Judge Colt in the First District United States Circuit Court in Massachusetts it was held that the Wagner Company was infringing on Mr. Pullman's rights, and an injunction was issued against it. Then the Pullman Company filed a bill and asked Judges Gresham and Blodgett to enjoin the Lake Shore and the Michigan Central from using the patent, and afterward the two judges denied the application for injunction until the merits of the case could be heard. The court held that the patent granted to Henry H. Sessions Nov. 15, 1887, involved the same improvement, and it was not shown in support of the motion for injunction that Mr. Pullman had a prior right to the patent.

The Metropolitan Underground Railway Company has been incorporated for the purpose of constructing a tunnel between New York City and Brooklyn, and, if its plans are approved by the Rapid Transit Commissioners, of building a great underground railway system in this city. The scheme includes the construction of a double-track tunnel under the East River from Battery Park to Atlantic avenue, Brooklyn; a similar tunnel under the North River from the Battery to Jersey City; and another, of the same size, from the Battery, under Broadway, to Union Square. From this point two branches east and west will be run to the upper end of the city. The incorporators include many prominent capitalists of New York. The directors are: Austin Corbin, E. Norton, T. E. Simmons, Edward Lauterbach, B. F. Tracy, E. F. Knowlton, W. B. Kendall, A. B. Boardman and W. B. Dickerman. Austin Corbin is the prime mover in the scheme. He states that capital for the construction of the first section of the road is already provided for.

Austin Corbin sent a letter yesterday to the Rapid Transit Commissioners, in which he said of the projected road: "The construction of the first section is already practically provided for, and the whole route as laid out is believed to be the best plan for rapid transit that can be devised. If your commission will adopt it I think I can assure you that the funds will be forthcoming for its construction as rapidly as the various sections can be built, and that the whole work will be completed as quickly as any road could be, as comprehensive as this one is."

At the general stockholder's meeting of the Edison General Electric Company the following trustees were elected: C. H Coster, James B. Williams, Thomas A. Edison, J. H. Herrick, Samuel Insull, Edward H. Johnson, A. Marcus, Carl Schurz, Francis S. Smithers, Henry Villard and J. Hood Wright. The only change from the present board is the substitution of J. B. Williams for Mr. Joseph S. Decker, who declined a re-election. The annual report shows profits from October 31st, 1889, to October 31st, 1890, not including those of the Edison Electric Light Co., $2,098,116, which with amounts carried forward as surplus, $679,401, and interest accounts $4,740, make a total of $2,782,257. Expenses, including dividends paid $665,314 and amount charged against cost of acquisition of capital stocks of various sub-companies, whose business has been consolidated into this company, together with $206,679 for general expenses, leave a surplus to be carried forward, $1,195,553. The report states that the company has about 6,000 employés on its pay rolls and that the transactions of the past year represented an aggregate of $10,000,000. According to the official record there were in operation on Nov. 1, 1890, within the territory of the United States and the Dominion of Canada, large and small Edison stations representing an aggregate capacity of 1,371,000 lamps. There was expended during the year $949,

274 for new buildings, new machinery and other additions to the permanent plants. The balance sheet of the general company shows that the quick assets, consisting of cash, bills receivable and accounts receivable, amount to $3,619,063, while the entire liabilities of the corporation, other than those to its stockholders, amount to only $2,647,828. Adding to the quick assets above stated the sum of $4,272,903, which represents amounts expended on contracts in course of completion, and materials on hand and in process of manufacture, the active working capital of the company over and above its liabilities appears to be about $5,250,000. All materials in stock and in process of manufacture are carried at net invoiced prices. The materials and expenditures on uncompleted work in progress are carried on the books at cost, and without any allowance for profits. This should be kept in mind in considering the value of the total of $4,272,903 above referred to. The balance sheet of the Edison Electric Light Company, which is not included in the statements presented by the Edison General Electric Company, shows the liabilities to be $4,398,722, the offsetting assets being: Property accounts, $30,973; trust fund, $51,612; cash accounts, bills receivable, open accounts, $185,029; stocks and bonds, $2,888,841; patents, $1,242,316.

MACHINERY AND SUPPLIES WANTED AT HOME AND ABROAD.

If any one wanting Machinery or Supplies of any kind will notify the "Engineering and Mining Journal" of what he needs, his "Want" will be published in this column.

Any manufacturer or dealer wishing to communicate with the parties whose wants are given in this column can obtain their addresses from his office. No charge will be made for these services.

We also offer our services to foreign correspondents who desire to purchase American goods, and shall be pleased to furnish them information concerning American goods of any kind, and forward them catalogues and discounts of manufacturers in each line, thus enabling the purchaser to select the most suitable articles before ordering.

These services are rendered gratuitously in the interest of the subscribers and advertisers; the proprietors of the "Engineering and Mining Journal" are not brokers or exporters, nor have they any pecuniary interest in buying or selling goods of any kind.

GOODS WANTED AT HOME.

2,030. A set of three-high 14 or 16-inch breakdown rolls with pinions and housings complete. Pennsylvania.

2,031. A 20 × 48 horizontal engine. Pennsylvania.

2,032. A 12-foot diameter band fly-wheel 32-inch face, 8-inch bore, weighing about eight tons. Pennsylvania.

2,033. A six-foot diameter band wheel 32-inch face, 8-inch bore. Pennsylvania.

2,034. A 10-foot diameter 5-ton fly-wheel, 8-inch bore. Pennsylvania.

2,035. Brick machinery. Maryland.

2,036. Planing mill machinery. Maryland.

2,037. A portable railway of about 565 yards, with crossings and six tipping cars. Alabama.

2,038. Catalogues, price lists, etc., of steam laundry machinery. Texas.

2,039. A complete outfit for a slate quarry, including boiler, hoisting engine, derricks, saw tables, rubbing bed, planing machine, emery wheel, etc. Virginia.

2,040. Two 70-saw gins. Texas.

2,041. About 200 feet of different sized belting. Texas.

AMERICAN GOODS WANTED ABROAD.

2,042. Catalogues and price lists of sugar machinery. Mexico.

2,043. Catalogues and full particulars as to export prices of mining machinery. South America.

GENERAL MINING NEWS.

ALABAMA.

LAWRENCE COUNTY.

R. L. GOYER OIL COMPANY.—This company struck the third sand and oil in its drill hole on the 17th inst. Dr. McReay, the county geologist, who was the first to call the attention of the present operators to the indications of oil in this region, says the strike gives promise of being a fifty-barrel well. The company controls about 30,000 acres by lease and purchase. Dr. McReay states that he is satisfied that the valley in which Lawrence is situated is rich in oil.

ARIZONA.

GILA COUNTY.

BOOTJACK.—It is reported that the recent strike in this mine is proving even richer than was expected. Six or seven sacks of ore have been taken from the bottom of the shaft, which will assay from $3 to $5 per pound in silver. The ledge at the present depth (56 feet) is about four feet wide and all pay ore, averaging 100 ounces or more, and two feet of the ledge over 250 ounces. In the center there is an inch streak of almost pure antimonial silver. The find has not been sufficiently prospected to reveal its extent, but it seems to be an important one. The ledge can be traced, on the surface, it is said, for a long distance.

OLD DOMINION COPPER COMPANY.—The superintendent of this company states that it produced 7,720,015 pounds of copper in 1890, the largest amount ever turned out in one year. There were smelted 27,885 tons of ore and 7,880 tons of limestone flux were used. During the year new ore bin were constructed, buildings erected and others substantial improvements made, and more are contemplated. The new year opens with works in full operation and a good supply of ore in the mine. The large compound Worthington pump has been started, and the new drainage tunnel, which will tap the shaft at a depth of 155 feet, will enable the company to handle with ease the large amount of water with which they now have to cope—a flow of about 260,000 gallons per day. The following figures, representing the production for the past three years, shows the progress made by the company: 1888, 4,600,000 pounds; 1889, 5,915,510 pounds; 1890, 7,720,015 pounds.

MARICOPA COUNTY.

YUMA COPPER AND SILVER MINING COMPANY.—Official advices to us show that this company is now engaged upon the construction of a pipe line, 7⅛ miles in length, by which sufficient water supply will be obtained for the operation of one 50-ton furnace. A 3-inch lap welded pipe is being used, and it is expected that the line will be finished by May 1. The mine, which is 100 miles from Phœnix, the nearest railway point, has been extensively opened, through seven shafts, and there is now said to be between 50,000 and 100,000 tons of ore on its dumps. Smelting operations have been impossible hitherto on account of lack of water. The company's works are otherwise well equipped and ready for running. The company, the shares of which are non-assessable, has authorized the issue of $250,000 of bonds; of these only $136,000 have yet been sold and all are held by directors of the company.

YAVAPAI COUNTY.

CROWNED KING MINING COMPANY.—This company's mill has been closed down on account of bad roads and consequent difficulty in shipping ore. A railroad to the Bradshaw mountains would enable this company, as well as several others there, to continue operations the entire year, and is much needed. The Crowned King mine is reported to be showing large bodies of good ore, and able to make a large output with better shipping facilities.

CALIFORNIA.

MONO COUNTY.

STANDARD CONSOLIDATED MINING COMPANY.—Following will be found an abstract of a letter from Mr. Arthur Macy, resident manager of this company's property. There is a larger exposure of available ore in the mine at present than there has been at any one time during the past two or three years, and the daily output of ore is from 10 to 20 tons greater than it has been at any time during the past five years. While the grade or quality of the ore is now lower in value than it has been in the past, the increased milling facility with the larger daily output and cheaper method of treatment, with higher average percentage of extraction by the combination process instituted within the past fortnight, will maintain a monthly product equivalent to the average of the past few years, if not exceeding it, and with a fair margin of profit. The task of changing the methods of operation, particularly in transferring the mill work from the mill heretofore in use to the larger, old mill belonging to the company, to meet the requirements for profitably operating the property under its present conditions with the increased daily output, has been one requiring careful procedure, and while the actual cost of altering or adding to the plant has not been great, such changes have been executed slowly and in a manner commensurate with our financial status. The mine and mill are now running to full capacity with completeness in detail, and we started on the 6th inst. the accumulation of a surplus.

NEVADA COUNTY.

BRUNSWICK CONSOLIDATED GOLD MINING COMPANY.—An official letter issued by the directors of this company under date of January 8th, 1891, states that the money remaining in the treasury after organization of the company has all been expended in the development of the mine. The shaft has been sunk to a depth of 375 feet, and drifts are now being driven east and west. The vein of ore which has been opened has shown continual improvements, and the faces of both drifts now show highly mineralized quartz. The west drift shows a ledge of 18 inches in width, and the east drift about two feet. The officers of the company consider the outlook very encouraging, and, in view of the condition of the treasury, have levied an assessment of two cents per share to carry on the work.

GRASS VALLEY GOLD EXTRACTING COMPANY.—This company is erecting works to treat gold ores by the Pollok hydraulic pressure chlorination process, which was described in the ENGINEERING AND MINING JOURNAL, February 15th, 1890. They will have a capacity of 200 tons per week, and will cost $75,000. All of the chlorinating apparatus to be used has been made under the supervision of Mr. Pollok in Glasgow, Scotland. The works will be operated by water power, water being obtained from the Grass Valley Water Company. If the business warrants, the capacity of the works will be increased. The capital stock of the company is $100,000. The directors are J. W. Higginbottom, W. Leonard Holms, Peter Johnston, Thomas Lockhart and Thomas Menzies. J. H. Higginbottom is president and general manager, W. Leonard Holms, chief chemist and treasurer, Thos. Lockhart, assistant chemist and secretary.

IDAHO MINING COMPANY.—This company held its annual meeting on the 5th inst. The following directors were elected: Edward Coleman, John C. Coleman, M. P. O'Connor, E. C. Creller and George W. Hill. Edward Coleman was chosen president and superintendent, John C. Coleman treasurer, and George W. Hill secretary. A dividend of $2 per share was declared, amounting to $6,200. This dividend is numbered 249, and makes the total paid to date $4,820,000. The gross total bullion production is estimated to have been about $11,000,000. For only one month in its history have dividends been deferred, and in that case was due to a fire in the shaft and flooding of the mine to extinguish the flames. A rich pocket of ore was uncovered in the mine recently, but it is reported that unless new discoveries are made that the ore bodies in the mine will be exhausted in another year.

(From our Special Correspondent.)

SANTA BARBARA COUNTY.

SAN FRANCISCO, Jan. 15.

CALKINS COAL MINING COMPANY.—This company has been incorporated with a capital of $1,000,000, for the purpose of working mines adjacent to South Riverside. It is believed that as the bed which it is to work is penetrated, a high grade of coal will be uncovered.

COLORADO

Mineral surveys approved by the United States Surveyor General of Colorado during the week ending January 10th, 1891: Survey No. 6,764, Land district, Durango; Name of claims Zuni, Zulu, Commonwealth, Yakami and Lowell lodes; 6,755, Garfield. Cave lodes; 6,641, Central City, J. B. lode; 6,737, Central City, Saint Joseph lode; 6,788, Garfield, Monitor lode; 6,691, Montrose, Silent Friend and Hiawatha lodes; 6,637, Durango and Montrose, Arastra placer; 6,801, Leadville, Erie, Blind Tom and Forest Queen lodes; 6,738, Leadville, Prince Albert Victor lode; 6,727, Leadville, Little Joe lode; 6,672, Gunnison, Boston No. 2 lode; 6,718, Montrose, Ouray and Scotch chief lodes; 6,673, Gunnison, Boston No. 3 lode.

Amended Survey.—4,756, Garfield, Pine, Valley Belle and A. & M. lodes.

Mineral surveys approved by the United States Surveyor-General of Colorado, during the week ending January 17th, 1891:

Sur. No., 6,805; Land Dist., Garfield; Name of claim, Peterborough lode; 6,809, Montrose, Scott & McDonald, Bernice and Oneita placers; 6,768, Del Norte, Alaska lode; 6,781, Garfield, Crazy Dan lode; 6,806, Garfield, Homestake, Maggie, Potomac, Little Susie and Home Rule lodes; 6,774, Leadville, Nora and Ground Hog lodes; 6,464, Leadville, Free Coinage and Bimetallic lodes; 6,503, Leadville, Jim Blaine lode; 6,769, Garfield, Orphan Boy lode; 6,763, Del Norte, A. & E., Lake and Fork lodes; 6,800, Garfield, Hedge lode; 6,780, Central City, Attica lode; 6,612, Durango, Gilt Edge lode; 6,770, Central City, Chatham lode.

Assistant Secretary Chandler has rendered a decision in which he makes an unusual distinction between building stone and other materials. In the case in point he holds that a quarry of stone used for general building purposes, as such, is not subject to entry as a placer under the mineral laws. Building stone, he says, has no peculiar property or characteristic that gives it especial value, such as attaches to gypsum, limestone, mica, marble, slate, asphaltum, borax, auriferous cement, fire clay, kaolin or petroleum, and for this reason is not subject to entry as stated. This decision is a direct reversal of all former practice of the general land office, and is of special importance to Colorado, inasmuch as there are a number of important cases from that State now pending in the department in which this principle is involved.

MARSHALL CONSOLIDATED COAL MINING COMPANY.—This company defaulted payment of interest on its bonds, November 1st, 1889, and these having been secured by deed of trust to the Farmers' Loan and Trust Company of New York, the mortgage has been foreclosed and the company's property advertised, in Denver, February 16th. The company owns extensive tracts of coal land in Boulder and Jefferson counties.

BOULDER COUNTY.

LIVINGSTONE MINING AND MILLING COMPANY.—This company has been incorporated by J. M. Murphy and Alonzo Boone, of Boulder; S. A. Hale, of Neenah, Wis.; M. D. Cowdery, of Lake Geneva, Wis., and H. L. Pratt, of Elgin, Ill. The capital stock is $100,000, shares $1 each.

CLEAR CREEK COUNTY.

PAY ROCK SILVER MINES, LIMITED.—This company has been organized in London with a capital stock of $1,000,000, divided into 200,000 shares of $5 each. The company proposes to take over the property of the Pay Rock Mining and Milling Company, giving in payment 190,000 shares of the new stock, with 10,000 shares to remain in the treasury of the company as working capital. It pays $30,000 in cash, and agrees, in addition, to take at once $15,000 of the treasury stock and to buy the remaining 7,000 at $5 as fast as needed for use at the mines. This gives $80,000 for working capital. Some 20,000 shares are issued in payment of expenses of floating the company.

GUNNISON COUNTY.

MAY-MAZEPPA CONSOLIDATED MILLING AND MINING COMPANY.—The continuation of the ore chute has been struck by the 500-foot level. The ore is of the same character as that cut by the 450-foot level, but the grade is apparently much better. Cross-cuts will be rapidly driven in the ore until the limits are found. The ore in the 450-foot level has been well opened, and a raise made to the 400-foot. In making this raise it was found that a 10-foot body of solid galena extended the entire distance. The regular shipment of 40 tons of ore per day is being maintained. The January dividend of this company was $12,500, instead of $10,000 as in previous months.

LA PLATA COUNTY.

PORTER COAL COMPANY.—The coal mines of this company, at Durango, promise to be very important. They produce a grade of coal from which the company is making some exceptionally good coke.

PITKIN COUNTY.

BUSHWACKER MINING COMPANY.—The manager of this company in his last monthly report states that its indebtedness, which, at the time of organization amounted to $112,000, had been reduced to $50,000 upon September 1st, 1890, and upon January 6th, 1891, was $39,288,67, not including operating expenses for December. After having disposed of the ore then at the sampler, and having paid December expenses, there would be a balance remaining of about $3,500. Present shipments from the mine amount to 10 or 12 tons of ore per day. There remain in the treasury of the company 147,412 shares of its capital stock. The new ore chute which was opened by the third level north in November has proved valuable. Its width is 15 feet; its thickness 3½ feet, and its average grade about 100 ounces silver per ton. The fourth level north, which is now being driven, is expected to catch the first ore chute by February 1st, and the second, above mentioned, about 30 days later.

MOLLIE GIBSON MINING COMPANY. -- A vast ore body, it is stated, has been opened both north and south of the incline. The extent of the ore is not yet known, but wherever the diamond drill has penetrated, ore has been found. Some of the cores from the drill are rich. A streak a foot wide north of the incline is said to average 1,500 ounces. The richest ore, however, lies on the third level south, where there is an immense body of it. The mine is shipping about 20 tons of low grade ore a day. This low grade assays from 60 to 100 ounces to the ton. Only this class of ore can be sold in the present state of the ore market.

FREMONT COUNTY.

COLORADO COAL and IRON COMPANY.—Material for the various buildings and machinery for the refining works, which this company is erecting at Florence, have begun to arrive and a large force of laborers and mechanics have been put to work upon the buildings. The Denver & Rio Grande railway has just completed a sidetrack to the refinery grounds, which makes it convenient for the delivery of material. The company struck a 50-barrel well on Christmas day, and is now drilling at a depth of 1,400 feet on No. 2.

ROCKY MOUNTAIN OIL COMPANY.—This company has struck oil in its well No. 7 to the amount of about 100 barrels daily. Two additional wells are now being sunk.

The following figures are officially given as the production of the oil wells and refineries in operation at Florence in 1890:

Crude oil, gallons	12,500,000
Refined oil, gallons	4,300,000
Lubricating oil, gallons	150,000
Highest yield of single well, per day, barrels	200
Sold in Colorado (refined), barrels	80,500
Shipped to other markets (refined), barrels	92,000
Sold in Colorado (lubricating), gallons	100,000
Shipped to other markets (lubricating), gallons	61,000

FLORIDA.

ALAFIA RIVER MINERAL LAND COMPANY.—This company has been incorporated at Albany, N. Y., by John A. Lightall, John A. Lightall, Jr., and William S. Lightall for mining phosphates and bones and earth containing such bones and phosphates in Polk and Hillsborough counties. The capital is $500,000. The principal office of the company will be at Syracuse, N. Y.

PHOSPHATE LANDS OF FLORIDA (LAKEVIEW), LIMITED.—This company was recently registered in London, England, by William Sutherland, with a capital of £2,000 in £1 shares. The object is to carry on the business of phosphate merchants in the United States of America. Articles of association have not been filed.

GEORGIA.

LUMPKIN COUNTY.

CROWN MOUNTAIN CONSOLIDATED GOLD MINING AND MILLING COMPANY.—This company has been recently organized with the following officers: W. W. Murry, president and general manager; R. F. Looney, vice-president; A. G. Sharp, secretary. Directors: W. W. Murry, D. A. Nunn, A. G. Sharp, W. T. Arrington and R. F. Looney.

GOLD MOUNTAIN MINING COMPANY.—This company has been recently organized with the following officers: W. W. Murry, president and general manager; Gen. John Boyle, vice-president; D. H. B. Hooper, secretary. Directors, W. B. Murry, John Boyle, A. G. Sharp and R. F. Looney.

HAND GOLD MINING COMPANY.—Col. N. H. Hand, of White Plains, N. Y., who is the president and largest shareholder of this company, which operates the Barlow, Yahoola, Hand, Gordon, Ralston, Cane Creek, Benning and Lawrence gold mines is at the mines to see the test made with the Embrey concentrator upon its sulphurets. This company has been operating with profit for many years, and is doing so yet, though there is much less free gold in its ore than formerly, a great amount of sulphurets coming in with increased depth. Three of these properties, the Benning, Lawrence and Yahoola, have well defined veins about four feet wide, carrying 10% or 15% of sulphurets. In order to test the practicability of concentrating and chlorinating these ores, an Embrey concentrator has been purchased, and five tons from each of the mines will be run over it; the concentrates will be forwarded to the Haile Gold Mine in South Carolina, for chlorination tests. A thorough series of tests will be made, which will throw much light on this question, which is attracting much attention in the South, especially in Georgia. Other mine owners and managers are awaiting the results of these tests, and should they prove successful concentration and chlorination plants will be erected at several places.

IDAHO.

WASHINGTON COUNTY.

(From an Occasional Correspondent.)

Your correspondent, writing of this county, in your issue of Nov. 22, makes some surprising statements, which, in the interest of the miners of the region, it is desirable to refer to. He has exaggerated the value of the silver ores at Mineral, which, instead of 79 ounces, only average about one-half that amount. The Maria mine has not contracted to furnish the smelter 4,000 tons of ore, but all the ore in the developed portions of the mine, a much greater amount. The term "lime dykes," used by your correspondent, is amusing. Outcrops of limestone strata belonging to a formation of undetermined age occur throughout this region. This limestone is usually of great purity, almost free from silica and magnesia, and is destined to play an important part in the development of the country. It is worked on an extensive scale near Huntington, on the Union Pacific Railway, supplying lime for use in Portland, Ore., and flux for the iron smelter at Oswego, near Portland. It is also used as flux by the smelter in Mineral.

Regarding the work of the matting furnace at Mineral your correspondent is unjust in saying that it is "put up without regard to economy of labor or convenience in handling material." To Mr. Lang, the manager, is due the credit of first perceiving the adaptability of the ores of this district to a matting process, and causing the erection of the first modified matting plant in the Northwest, as well as for the introduction of numerous ingenious mechanical appliances and methods of work, hardly to be found in any similarly situated plant. In this connection the following points may be mentioned. The charging of half a ton of ore, limestone and slag from an ordinary ore car directly into the furnace shaft without further mixing than that due to loading and dumping, and without any spreading in the furnace, is a labor-saving method found by experience to give as good results as spreading small charges with the shovel. The fuel is charged in the same way. The use of flue dust in the bottom of a slag pot into which the matte is tapped, causes a combustion of sulphur with concentration of the regulus and a slagging of the dust. This novel method of disposing of flue dust was devised by Mr. Lang.

Although an inside crucible is used to collect the matte, the slag is allowed to flow through an outside settling basin to catch any particles of matte which may be carried over, and the overflow from this basin falling into a stream of water running beneath the floor is granulated and carried away. A Weston hoist, with trolley running upon an overhead railway, is used to move and replace the settling basin. This simple device enables two men to handle with ease and rapidity weights of over a ton. A sectional construction of the iron ring surrounding the crucible of the furnace enables it to be entered at the bottom when clogged, owing to the formation of a "sow." Once a week the blast is stopped, the slag removed and the crucible deepened and repaired, with a loss of time of only five hours. This practice, so long in use with the old German Spurofen, is, perhaps, novel as applied to the modern water jacket.

There are other points in the methods in use at this furnace to which the management does not at present care to call attention; suffice it to say that the smelting of 28 tons of material daily with only three men employed about the furnace on each shift does not indicate a lack of economy of labor. The cost of smelting here is not the figure stated by your correspondent, but the smelting company does not care to make these details of its business public. So far from a "chloridizing mill with amalgamating pans" showing "a saving of $4 to $5 a ton," as your correspondent assumes, the fact is that a plant of this sort was used many years ago, but failed to extract enough silver from the most docile surface ores to pay expenses. Here also a Russell process plant erected last year at a cost of some $30,000 proved a total failure. Both of these plants attempted to work the same ores which are now being successfully smelted.

The operations of the furnace in Mineral have attracted the attention of metallurgists in remote portions of the world, but as the company has neither stock nor town lots for sale, and has never tried to "work a boom," it has remained almost unknown to the public, even in the regions near at hand.

KANSAS.

CHEROKEE COUNTY.

A special report shows that during the week ending January 17th the output of ore from the mining districts of Galena and Empire City was: Rough ore, pounds milled, 1,562,400; zinc ore, pounds sold, 495,000; lead ore, pounds sold, 52,560. Sales aggregated a total value of $6,510.

MICHIGAN.

IRON.

HOUGHTON MINERAL LAND AND IRON COMPANY.—At the annual meeting of this company, held in Sharon, Pa., recently, the following gentlemen were chosen directors for the ensuing year: Geo. W. Johnson, Newcastle, Pa.; P. L. Kimberly, R. Williamson, Sharon, Pa.; John T. Jones, Iron Mountain, and J. R. Devereaux, Marquette, Mich. Geo. W. Johnson was elected president and R. W. Williamson secretary and treasurer. The company owns the fee of a number of the rich producing iron fields of the Lake Superior region, and its heavy stockholders are largely interested in certain well-developed properties, among which might be mentioned the Hamilton Ore Company.

COPPER.

ATLANTIC MINING COMPANY.—Concerning the explorations which have been carried on on this company's property during the past summer, Mr. John Stanton, the secretary and treasurer, stated to a reporter of the ENGINEERING AND MINING JOURNAL that a surface crosscut had been driven a distance of from 1,600 to 1,700 feet across the formation, cutting several belts of amygdaloids and conglomerates. Prospecting has been discontinued because of inclement weather. It will be resumed in the spring. Just as operations were about to be suspended a belt of amygdaloid, carrying quite a little copper, was cut. Mr. Stanton states that no one of the belts intersected was the Quincy lode, for which search has been made at different times.

CALUMET AND HECLA MINING COMPANY.—A system of automatic fire extinguishers has been placed in this company's stamp mills at Lake Linden. The work of putting in the duplicate set of mammoth upright compressors in the Hecla engine house will be completed in a few weeks. The new combination rock and shaft house at No. 8 South Hecla is about finished and the foundations are ready for a similar structure at No. 7. Instead of a central rockhouse for the South Hecla division as at the Hecla and Calumet divisions, each shaft will have its own rockhouse, which will serve the double purpose of shafthouse and rockhouse. The structures are about 25 × 40 feet, built up straight from the ground to the eaves and three stories high. Repairs on the Superior engine, which it will be remembered blew out its cylinder head a few weeks ago, are now under way.

CENTRAL MINING COMPANY.—In 1886 this company acquired by purchase a title to 1,600 acres of land adjoining its property, on which is located the old northwest mine. Some considerable time after the purchase a cross-cut from the nineteenth level of the central mine was started toward the transverse fissure vein on which the old mine is located. To a representative of the ENGINEERING AND MINING JOURNAL, Mr. John Stanton, secretary and treasurer of the company, stated the vein was cut during the fore part of the present month at a depth of 1,500 or 1,000 feet below the previous workings, and a vertical distance of 1,655 feet from the central mine. At the point intersected the vein is one foot wide and carries a little copper. The transverse fissure veins in this district are characterized by their extreme irregularity—the central vein is a good illustration, and it is fair to believe that as the Northwest vein is explored it will be found to widen and narrow alternately. A dritt is now being driven south for the purpose of proving the ground. Later a drift will be run north for the same purpose.

MISSOURI.

JASPER COUNTY.

(From Our Special Correspondent.)

Jan. 19.

Bad weather and bad roads have interfered with the delivery of ore during the past week. There has been no change in the zinc ore market, the average price being $23.50 per ton. The price of lead advanced to $25.50 per thousand. Following are the sales from the different districts as far as reported: Joplin mines, 1,259,360 pounds zinc ore, and 129,850 lead, value $18,238; Webb City mines, 1,106,600 pounds zinc ore and 65,630 lead, value $14,653.

Carterville mines 890,630 pounds zinc ore and 116,845 lead; value, $13,433.

Zincite mines 133,750 pounds zinc ore and 2,470 lead; value, $1,638.

Lehigh mines 43,330 pounds zinc ore; value, $550.

Oronogo mines 89,740 pounds zinc ore and 16,900 lead; value, $1,449.

Galena, Kan., mines 475,000 pounds zinc ore and 52,560 lead; value, $6,510.

All districts, total value $56,471. Special from Aurora district: 80,000 pounds zinc ore, 86,000 pounds lead and 513,000 pounds silicate; total value, $8,803.

Spelter output, Pittsburg, Kan.: R. Lanyon & Co., 155,000 pounds; J. H. Lanyon & Bro., 98,000 pounds; Granley Mining and Smelting Company, 96,000 pounds; W. & J. Lanyon, 96,600 pounds; Wier City Zinc Company, 140,000 pounds; total, 585,600 pounds.

The Big Bonanza zinc mines have been shut down for the past two weeks in order to put in heavier machinery, but will start again to-day.

The Annie Baxter mine operating on the Mahask land, last week turned in 11,420 pounds of lead. The Bay State mine on the Oswego land produced 71,080 pounds of zinc ore and 1,760 lead. Snyder Bros., operating Mrs. Allen's land, are still piling up the zinc ore from their concentrating mill, and last week only sold 64,650 pounds zinc ore. Collins & Peterson, who recently purchased the Metska lease on the Toucher land, have put up a new plant of machinery and are developing the property by sinking three shafts. They have already opened a fine body of zinc ore in one.

The Manhattan mine, on the Sterling Lead and Zinc Company's land produced 31,440 pounds zinc ore. The Little Nugget, on the same land, made an output of 17,880 pounds.

The Big Elk Mining Company has been organized, with a capital of $25,000, one half paid up, for the purpose of operating mines at Webb City. Capt. L. R. Reece is the president of the company.

The Centre Creek Mining Company, at Webb City, produced last week 914,100 pounds of zinc ore and 49,770 lead ore.

The output of Webb and Carterville for the week amounted to $29,886.

MONTANA.

Dr. G. C. Swallow, inspector of mines for Montana, estimates the mineral output of the State by counties to have been as follows:

Beaverhead County	$2,000,000
Deer Lodge County	8,000,000
Fergus County	250,000
Jefferson County	3,500,000
Lewis and Clarke County	3,000,000
Madison County	2,500,000
Meagher County	300,000
Missoula County	250,000
Silver Bow County	30,000,000
	$49,800,000

DEER LODGE COUNTY.

CARBONATE EXTENSION CLAIM.—This prospect is reported to have been bonded to William Meader of Butte, and J. C. Shaubut, of Deer Lodge. The claim is located in the Zosel District, and joins the Emory mine. $10,000 is named as the purchase price, and $1,000 is to be paid as a bonus to Mr. Zosel. Unless in six months Messrs. Meader and Shaubut conclude to purchase the property, all the machinery that is placed in position becomes the property of the present owner of the claim. The mine is comparatively undeveloped, but from its neighbor, the Emory, considerable ore has been taken.

LEWIS & CLARKE COUNTY.

BIG OX MINING COMPANY.—Attachments against this company aggregating $8,000 are reported to have been filed in the District Court at Helena. About $3,000 of the amount is due the miners for wages, while the balance is claimed in the shape of loans by officers of the company. The president of the company is C. Emerson, of Minneapolis, the rest of the officers being Montana men. The capital stock is $1,000,000, half of which has been sold to Eastern parties. Mr. C. Emerson, the president of the company, is reported to have said: "Owing to the state of the money market, it has been impossible to raise money to pay the men. Telegrams received on the 19th inst. from Secretary and Treasurer Dodge, of Boston, say he has arranged everything and started for Helena. The company will be on a good financial basis hereafter. Charges that we are doing other than a legitimate mining business are untrue."

MONTANA COMPANY, LIMITED.—The official monthly report shows: Total weight of ore crushed during December, 7,050 tons; yield from the three mills, 894,100; working expenses for the month, $58,800; the estimated number of ounces contained in returns by assay being, gold, 3,541 ounces; silver, 16,201 ounces.

SILVER BOW COUNTY.

ANACONDA.—On July 5th, 1890, the Mountain lodes, with the Buffalo, Burnett and Lowville lodes, were sold under sheriff's sale at the court house in Butte. The sale was to satisfy a judgment for $195,713.29, obtained by R. C. Chambers against the Mountain Consolidated Mining Company. As usual, the plaintiff in the action was the highest bidder, and the property was acquired for $211,953.62. The customary certificate of sale was then issued to R. C. Chambers, and a duplicate was filed during the six months while the property awaited redemption. In the meantime Robert Chambers has made over all his right to the property, to James B. Haggin, of the Anaconda Company. The six months allowed for redemption expired on January 5th, 1891, and so the five mining claims now stand in the name of James B. Haggin. The High Ore, Wake-Up-Jim and Green Mountain mines have now been closed down about forty days, and with the exception of the Mountain Consolidated, all the properties embraced in the syndicate are idle, with no prospect of a speedy resumption. The Anaconda company's supply of ore, which amounts to about 1,400 tons per day, is being taken from the St. Lawrence, Anaconda and Mountain Consolidated mines, the first two of which are yielding about 800 tons and the latter about 600.

ANACONDA MINING COMPANY.—It is reported that during the week articles of incorporation of this company were filed at Butte, Mont. The incorporators are William C. Gulliver and Allan McCullah, of New York, and William H. Green, of Englewood, N. J. The capital stock is $12,500,000, divided into 500,000 shares. The men named as trustees are Jacob H. Schiff, August Belmont, Moses Kirkpatrick, William W. Dixon and Francis E. Sergeant.

BETSY DAHL.—A three-foot vein of copper-silver ore in the face of the north drift from the 240-foot level is reported to have been uncovered in this mine. The shaft is 280 feet deep, but the prospects at the 240 level were good enough to warrant the present work, which is proving entirely satisfactory to the lessees.

BOSTON AND MONTANA CONSOLIDATED COPPER AND SILVER MINING COMPANY.—The New England Trust Company, as trustee for this company's sinking fund, has been advertising for proposal to sell bonds of the company at not above 110 and accrued interest sufficient to absorb $4,548.75, in accordance with the mortgage dated February 1st, 1890, and bonds at the same figure sufficient to absorb $50,684.40, according to the mortgage of August 23d, 1887. Proposals will be opened January 23d, 1891.

BUTTE AND BOSTON MINING COMPANY.—The dump room of Shaft No. 2, Silver Bow, was always very limited, and now it is reported that this company is building a tramway from the mine to a point south of the motor and electric line tracks for the purpose of utilizing the ground there, nearly all the space above the track being filled up. Considerable ore is being hoisted through this shaft, and new bins have been erected. This company made quite an innovation in the customs of the camp by its recent introduction of a diamond drill for prospecting purposes.

COLORADO AND MONTANA COMPANY.—The new double reel Dickson hoisting engine at the Gagnon has recently been completed. The engine rests on solid stone foundation thirty feet above ground and the ore and waste will be raised so much higher to give greater dumping room. The gallows frame has had an addition put to it; new ore bins and tramways leading thereto have been erected so that the Gagnon hoist looks one of the largest in camp.

NEVADA.

HUMBOLDT COUNTY.

PARADISE VALLEY MINING AND MILLING COMPANY—The property of this company has been sold at sheriff's sale for $19,740.44. It was bid in by W. J. Bell.

LANDER COUNTY.

The antimony mine at Big Creek, owned by a number of Austin men, is now being worked by a force of six men, and is producing an excellent grade of ore. A lot of 30 tons was shipped to Liverpool on the 5th inst.

NYE COUNTY.

Some samples of cinnabar from the mine owned by William McCann were recently tested in the Monitor-Belmont mill and gave very satisfactory results. The mine is situated on the western slope of the Spanish Belt Range in this county. The mine is to be actively developed.

STOREY COUNTY—COMSTOCK LODE.

(From our Special Correspondent.)

SAN FRANCISCO, Jan. 14.

BENTON CONSOLIDATED MINING COMPANY.—The secretary of this company has reported having a balance of $79,986.34 in the treasury at the beginning of the year.

CHOLLAR MINING COMPANY.—During the month of December, 1890, there was worked 2,325 tons of ore which yielded bullion having a gross value of $30,047.62. The cost of reduction was $16,275, the net proceeds being $13,772.62. The average assay value was $19.34 per ton. The mill worked the ore up to nearly 66 8-10%. The gross average in bullion was $12.58 per ton and the net average $5.88 per ton. The total bullion product for 1890 was $401,108.28.

CONSOLIDATED CALIFORNIA AND VIRGINIA MINING COMPANY.—The last shipment of bullion for December account was made last week and consisted of nine bars of bullion, valued at $36,411.25, and making a total for the month of $100,031.37, and a grand total for the year 1890, of $1,798,268.41, of which sum $162,000 was disbursed in dividends.

The remarkable activity in Cons. Virginia stocks during the current week is reported to be in consequence of a rich streak of ore being encountered on the 1,650 level, west of all other workings, and that it has widened out from six inches to nearly six feet; also that a similar streak has been cut on the 1,500 level at a western point corresponding in place with the one previously alluded to, allowing for difference of angle between the two levels. With such a streak of rich ore an immense amount of low grade ore could be worked at a profitable average, and although the last weekly report does not confirm popular rumor, yet it is officially stated that some ore has been uncovered that will average $30 per ton.

CROWN POINT MINING COMPANY.—The pumping operations are proceeding satisfactorily. During the week ending Saturday last the bottom of the incline was cleaned out, five sets of timbers replaced and preparations made for another set of timbers, the vertical distance from the 1,500 level to the surface of the water having been lowered 13 feet in the week.

GOULD & CURRY MINING COMPANY.—A strike in this mine has been scarcely hoped for, but it is common talk that a body of rich ore has been encountered on the 200 level in a drift at a point 690 feet west of the shaft. This strike is in El Dorado ground and early in the seventies, Charley Bonner had several good prospects in the same ground, but failed to follow them, as the hanging wall had such a misleading appearance that it was, at that time, considered that the west foot wall had been reached. The steadiness with which Savage stock is selling has given rise to the idea that the rich body of ore will be found not in the Gould & Curry but in Savage ground. In days gone by the upper levels of the mine were enormously rich, millions of dollars being extracted from a comparatively few cubic feet of ground, and there is a faint hope that the reported strike may, to some extent at least, revive the fortunes of the mine.

HALE & NORCROSS MINING COMPANY.—A north drift is being run from the incline station on the 1,400 level, which has been reopened for the purpose of prospecting Savage ground, and a winze is being sunk to connect with this north drift. The winze is following the ore body found on the 1,300 level.

OVERMAN MINING COMPANY.—During the month of December, 1890, bullion was received valued at $27,027.32.

POTOSI SILVER MINING COMPANY.—The south lateral drift from the Chollar incline, 1,230-foot level, is out 605 feet and in the face there is a streak of quartz 3½ feet wide which assays from $12 to $25. Work has been commenced extending the crosscut east of the winze station, 1,130 level, further into the east country. In the end of the crosscut there are seven feet of good ore.

SAVAGE MINING COMPANY.—The week ending Jan. 10 there was shipped to the Mexican mill 547¾ tons of ore, having an average battery assay of $16. There is bullion on hand at the mine and mill amounting to $8,610. The bullion yield for the month of December, 1890, was $30,276.62, making a total for the year of $386,630.71.

NEW MEXICO.

GRANT COUNTY.

SILVER HILL MINING COMPANY.—The Silver Fountain mine, belonging to this company, was recently bought in under execution of judgment against the company by Capt. Cooney, of Silver City, for the amount of $29,458.36. The property has produced, in round numbers, $360,000, and paid dividends amounting to $50,000, but with subsequent failure to meet running expenses, the company suspended operations and the mine has now been idle for several years. The new owner, it is stated, will resume work.

SANTA FE COUNTY.

SANTA FE COPPER COMPANY.—Recent letters from this mine say that the concentrator, which is in progress of erection, will be ready in a week, when the production of copper will begin. There is a large amount of concentrating and a good quantity of smelting ore on hand, which makes a favorable outlook for the coming year. A good deal of prospecting has been going on during the past year. No metal has been produced since March, 1890. The concentrator is said to be put up by individuals and leased to the company, which has the privilege of buying it.

PENNSYLVANIA.

COAL.

Breast No. 6, in the Mammoth vein at the Richardson colliery, caught fire by an explosion of gas a few days since. It was extinguished after hard

work, the whole colliery having been endangered. It is also reported that the Thomaston colliery, which was sealed up several months ago to shut off communication between the fired workings and the other departments with the hope of smothering the fire will be opened at once.

The Stanton colliery, operated by Lawrence Brown & Co., situated near Mahoney Plane, which has been standing idle for many months, owing to a flood, will be put in working order and operations resumed shortly. The water in the Provost mines, at Centralia, has also been drained off, and a tunnel will be driven to open up new workings. L. A. Reilly & Co. intend to make this a regular and large producer.

In 1890 the Connellsville producers marketed 6,221,518 tons of coke, the bulk of which was sold at a better price than coke has ever commanded since 1879. The output for the first two months in the year was sold for $1.75 per ton, and the price for the remainder of the year was $2.15. The trade of the year may, therefore, be said to represent in round figures an amount of $12,900,000. The *Courier* states that the growth of trade during the past five years may be summarized as follows:

Year.	Tons made.	Value.
1886	4,109,331	$5,876,343
1887	4,296,343	8,413,672
1888	4,971,287	5,965,544
1889	5,825,826	8,156,156
1890	6,221,518	12,903,940

During the year operators have been seriously hampered by lack of cars, and furnaces in the West were frequently on the verge of banking down, or in danger of chilling for want of fuel. During this car famine a large number of individual cars were put into the trade by both producers and consumers. The total number of cars now in the trade is estimated at 4,000, of which 1,500 were mustered into the service in 1890.

Labor disputes were numerous during the year, but not serious, and the employés have been getting the best wages they ever received. Negotiations over next year's wage scale have come to an abrupt conclusion, however, and a strike is now threatened. Oven building was active during the year, over 1,600 new ovens having been erected, besides a large number rebuilt. Statistics show an increase of from 14,458 to 16,020, and ovens in course of construction will swell the total to 16,113.

The ovens were operated to within 5% to 7% of their capacity during the first three months of 1890. Overproduction was then threatened and a 15% reduction agreed upon. This put out between two and three thousand ovens. The agreement did not last very long. As soon as the demand improved the idle ovens were gradually fired up again, so that by November 1st there were a little over a thousand out. The yards soon became so blockaded that another restriction was necessary. It was therefore agreed to shut down 25% of the ovens, and the close of the year accordingly saw 3,800 ovens out of blast.

PHILADELPHIA & READING COAL AND IRON COMPANY.—The Eagle Hill colliery at St. Clair, operated by this company, has been shut down for an indefinite period.

LEHIGH VALLEY COAL COMPANY.—This company now has a nest of 21 boilers in position at the Pott's colliery, on the old York farm, and it is expected that in six months more one of the largest coal breakers in the anthracite region will be standing there. Work on the breaker has already been started and will be pushed. The shaft at the colliery is being driven 450 feet deeper and at the bottom it is reported a large main gangway will be driven. From this it is the intention of the company to drive a number of tunnels into the Sharp Mountain and take out the coal below the water level. From tests that have been made the operators are confident of finding coal of good quality and in quantity. It is not likely, however, that work on the tunnels will be commenced before spring, although the main gangway will be driven as soon as the sinking of the shaft is completed.

SOUTH DAKOTA.

LAWRENCE COUNTY.

The grading of the site for the new Deadwood and Delaware smelter is practically completed, and it is expected that the plant will be ready to blow in during the month of May. Only five stockholders are prominently mentioned in this connection—Joseph and W. H. Swift, Mr. Pennypacker, Dr. F. R. Carpenter and the late Mr. Miller. The plans were reported to have been seen at Deadwood during the past week. The main building is to be 214 feet long and four stories high. A 16×42 Corliss engine—240 horse power—a No. 5 Gates crusher with a capacity of 40 tons per hour, two blast furnaces of 100 tons capacity each, two reverberatory furnaces of 20 tons capacity each, and two No. 6 Root blowers, with other special machinery, will complete the outfit.

RICHMOND MINING COMPANY.—Everything in the mill belonging to this company at Galena had been prepared for starting up when the driving-rod of the engine broke, necessitating a shut down. A new rod has been sent for to Fremont, Neb., and in about ten days the mill will be started up anew. The ore all comes from the Richmond mine, and a large body is reported in sight. Some of the ore recently struck is said to assay very high in silver.

UTAH.

According to a statement issued by Wells, Fargo & Co., the value of the metal products of Utah for 1890 was as follows:

	Quantity.	Value.
Silver, ounces	8,165,586	$8,492,209
Gold, ounces	33,851	677,020
Copper, pounds	956,708	76,536
Lead, crude, pounds	63,181,817	1,895,455
Lead, refined	5,082,800	203,312
Total		$11,344,532
In 1889, same authority		8,830,081
Increase for 1890		$2,514,451

In the above statement silver is estimated at $1.04 per ounce; gold, $20 per ounce; crude lead, 3 cents; refined lead, 4 cents, and copper 8 cents per pound.

PARK COUNTY.

ANCHOR MINING COMPANY.—Preparations are being made by the management of this company for a season of more active work during the coming summer. Plans are now being drawn for machinery for new hoisting works to be erected on the site of the old works, which were burned some time ago. At the immediate shaft the foundation is being laid for the new Rand duplex compressor, which is now on the way. Operations in this property have been somewhat handicapped hitherto by want of sufficient air, but when the new compressor is put in there will be a decided change for the better. At present the company is shipping daily about 125 tons of low grade ore to the Union concentrating mill.

ONTARIO MINING COMPANY.—The No. 2 shaft is going down slowly on account of trouble with water. Its depth at present is 1,470 feet. When the 1,500 level is reached drifting will be commenced on the drainage tunnel. Being worked at both ends, the time of completion of this mammoth undertaking will be hastened. The shipment of bullion from the mill for the week ending Jan. 10 amounted to 32 bars valued at $17,461, and ore shipments to Mackintosh's Sampling Works 172,830 pounds.

PARK CITY MINING COMPANY.—At a recent meeting of the stockholders of this company the following board of directors was elected: John L. Street, Charles E. Street, Andrew Lundin, Peter Anderson and Frank H. White; president, John L. Street; vice-president, F. H. White; secretary and treasurer, Charles E. Street. The company's property has not been worked to any extent during the past year, but it is the intention of the management to dispose of the treasury stock and commence development in the early spring.

WASHINGTON.

STEVENS COUNTY.

According to the Portland *Oregonian*, articles of incorporation of the Kettle Falls & Columbia Valley Railway and Navigation Company have recently been filed in the auditor's office of Stevens County. The road is to run through Columbia Valley to the mouth of Spokane River, thence through the Big Bend country to Wallula Junction, where it will connect with the Union & Northern Pacific, and thence to some point on the Columbia near that place. The capital stock is $2,500,000. The officers are as follows: Henry D. Bushnell, President; William H. Reid, of Rochester, N. Y., Vice-President and Treasurer; Henry D. Quimby, Secretary. A large amount of preliminary work has already been done, and the final survey will be pushed as rapidly as possible. The company also proposes to establish lines of steamers on both the Lower and Upper Columbia.

WEST VIRGINIA.

MCDOWELL COUNTY.

ANGOMA COAL AND COKE COMPANY.—This company was chartered with a capital stock of $100,000 and leased 1,800 acres about three miles and a half below Elkhorn station. Mr. Thomas, the general manager, formerly of Wilkesbarre, has had a large force of men busy at work opening his mines and building 100 coke ovens. He is pushing the work as rapidly as possible, building 50 of the ovens himself and having 50 built by contract. Mine openings will be made on both sides of the ravine, and when opened and in operation the whole plant will be fitted up with the finest machinery, etc., for doing good work.

WYOMING.

NATRONA COUNTY.

It is reported that a French and English syndicate has purchased the largest of the well-known sulphate of soda lakes, located near Chimney Rock. The lake is circular and about 240 acres in extent. This deposit, which is very large, is particularly valuable from the fact of its proximity to a railroad.

FOREIGN MINING NEWS.

Agnayos Brothers, of Mexico, it is reported, have at last been forced by suits to pay $1,427,000 of the purchase money, and $60,000 additional as the output of the Mexican Mulatos mine since plaintiffs have controlled it, upon the ground that the gold mine had been salted to render it unproductive. This property had been bought by Alvinsea Hayward and others for $710,000 in cash and $865,000 in promissory notes.

AUSTRALIA.

VICTORIA.

NEW CHUM GOLD MINING COMPANY, LIMITED.—This company has been organized in London, England, for the purpose of acquiring mines, mining rights and metalliferous lands in the colony of Victoria. The capital stock is £25,000 in £1 shares.

BELGIUM.

Comparing the mineral output of Belgium for 1877 and 1888, the coal raised in the former year amounted to 13,669,077 tons (2,204 pounds), valued at 150,584,442 francs, and in 1888 the total reached 19,218,481 tons, of 162,018,000 francs value. Iron ore diminished in output from 234,127 tons in 1877 to 185,542 tons in 1888; lead ore (galena) decreased from 11,542 tons to 414 tons only, while manganese ore, which was not produced in 1877, reached a total output of 27,787 tons in 1888. Zinc blende, 26,310 tons; zinc calamine, 18,677 tons, and iron pyrites, 26,107 tons in 1877, declined in 1888 to 12,370 tons, 12,167 tons, and 3,916 tons, respectively.

CANADA.

PROVINCE OF ONTARIO.

(From our Special Correspondent.)

PORT ARTHUR, Jan. 10.

The season of 1890 terminates one of the most successful years in the history of silver mining in the Port Arthur district. While the amount of silver raised and marketed is not as high as in some former years, it is very gratifying to know that almost all the work performed during the year has been done with a view to developing new ground, and that at the present time there is more ground developed and a larger extent of ore bodies ready for stoping than at the beginning of any year since silver mining first began in this district. It is confidently expected that the year 1891 will be one of great prosperity and advancement, owing largely to the increased confidence which mining men are displaying in making substantial cash investments, and to the increased mileage of railways through the mining region. The Port Arthur, Duluth & Western Railway has been extended from Port Arthur to the west end of Whitefish Lake, a distance of 50 miles, and will afford facilities for operating all of the mining properties along its route, many of which have heretofore been idle. Among these might be mentioned the Medicine Bluff, Silver Glance, Silver Fox, Mink Mountain. The railway will be completed to the American boundary during the coming summer. It traverses the entire length of the Gunflint Lake iron fields, lying between Arrow Lake and the international boundary. Several properties have had considerable surface work performed on them during 1890, in anticipation of the advent of the railway this year; notable among these are the iron lands owned by the Kingston & Pembroke Mining Company and R. R. Paulison, of Jacksonville, Fla. Survey parties are now laying out two railways to tap the Aticokan iron range; one is for the Ontario & Rainy River Railway Company, to run from a point on the Port Arthur, Duluth & Western Railway, near Sand Lake, to and through the Moss township gold fields, to Sabowe Lake and Aticokan River. The Ontario and Dominion governments will be asked, and it is expected they will aid the construction of this road by way of cash subsidies. The promoters promise to have the road completed to the Aticokan iron range in 1892. Another survey party is out in the interests of the Aticokan Iron Range Railway Company, which company is seeking a charter to build a line from a point on the Canadian Pacific Railway, at or near Carlstad, to the Aticokan River, a distance of 50 miles. Government aid will be asked for this road. With one or both of these roads completed the development of this range would be assured, and an impetus given to mining equal to that on the iron ranges of Minnesota, Wisconsin or Michigan.

Dr. D. C. Rood, of the Western Mine Equipment Company of Chicago, is now in town, and has submitted a proposition to the municipal authorities for the erection and operation of a silver smelter, and concentrating plant, capable of treating 30 tons daily.

BADGER SILVER MINING COMPANY.—Your correspondent visited this company's mine recently, and was shown through the various workings by Superintendent Shear. Since it acquired the Porcupine in June last its operations have been confined to development work, very little stoping having been done, except in No. 1 level west from the shaft on No. 2 vein. No. 1 adit level on No. 4 vein has been driven 660 feet under the new management, and is now in a total length of 872 feet. The shaft has been sunk 60 feet, and is now a total depth of 130 feet. No. 2 level has been started from the bottom of the shaft, and has been driven 80 feet east and 80 feet west from the shaft. Three winzes have been started down from No. 1 adit. They are 140 feet apart, and will be driven through to No. 2 level before any stoping is done. Two upraises have also been started. They are 30 feet above the roof of the level, and have not yet reached the top of the ore body. These upraises are 160 feet apart and show the quality of the ore to be uniform throughout. The vein has been left standing in No. 1 and No. 2 levels; in No. 1 it averages 3½ feet in width, and in No. 2, 4 feet. The portion left standing in No. 1, 500 feet in length,

averages 200 ounces to the ton, exclusive of a streak of high-grade ore, principally of native silver, which lies on the hanging wall. It is from 4 to 10 inches in width and averages 2,000 ounces to the ton. Wherever it has been opened there is a band or streak of carbonate of baryta, "witherite," next to the native silver on the hanging wall. This band is also found on the hanging wall in the lower level. The vein is steadily improving in width and quality of the ore as depth is attained. In No. 3 vein an adit has been driven 300 feet. The vein is well defined, having an average width of 3 feet, and carries good milling ore. A winze is being sunk near the breast of the level, which shows the vein to be improving. In No. 2 vein a shaft 130 feet deep has been sunk, and an adit level 570 in length has been driven. This vein has produced some very high grade ore; it averaged 2,000 ounces in the stopes, some bunches going as high as 10,000 ounces to the ton. The West End vein is looking well. A 200 foot level has been driven on the vein. A winze is being sunk near the junction of No. 1 vein. It is now down 20 feet. Some of the ore in this vein is high grade, the average being about 80 ounces to the ton. The total shipments since August 1st last have aggregated 128 tons of ore, and concentrates valued at $150,000; 17 tons of smelting ore are now on hand ready for shipment. Press rumors to the effect that the owners are hawking this property around, endeavoring to sell it, are entirely without foundation.

BEAVER MINING AND MILLING COMPANY.—Seven carloads of concentrates and smelting ore have been shipped by this company since August 1 last, aggregating 103 tons, valued at $130,000; one half the force of miners is kept constantly at development work. The vein matter is left standing in most of the openings. There are large blocks of ground ready for stoping both in the main workings and in the North Bluff. The mill is treating 30 tons daily. An addition of 10 heads of stamps to the milling plant is now contemplated.

CROWN POINT MINING COMPANY.—Work has been suspended on this company's property for some time, owing to some difficulties in connection with work performed previous to the transfer of the property to the present owners.

MILWAUKEE IRON COMPANY.—This company owns large tracts of iron lands in the immediate vicinity of Gunflint Lake on the Minnesota side. It is negotiating with the Port Arthur, Duluth & Western Railway for the haulage of its ore from the mines to Port Arthur, for shipment to Lake Erie ports on the completion of the road to the boundary.

MURILLA MINING COMPANY.—A new engine and boiler have been set up at this mine, and a contract let to sink the shaft another 100 feet. Ten miners are employed. The shaft has been pumped out, and sinking was commenced on the 8th inst. It is intended to thoroughly explore and test the property. The work is under the superintendence of John S. Winder.

OGEMA MINING AND SMELTING COMPANY.—This company, which is seeking incorporation under the laws of Ontario, began operations on its lead property in Black Bay on the 2d inst. It has a vein carrying a high percentage of lead, with some silver. The company is composed of business men possessing financial strength. The property will be thoroughly developed. James Dickenson is at present superintendent.

SHUNIAH WEACHU MINING COMPANY.—Work on No. 4 shaft has been suspended for the present, the company deeming work on No. 3 to be sufficient for all exploratory purposes. Sinking is being continued on No. 3 with very encouraging results. A considerable change is taking place in the nature of the formation at the bottom of the shaft or the 735-foot point. Development work is being carried on on the several small veins traversing the mountain. The stock of mill rock is receiving substantial additions daily from these veins averaging from 15 to 20 ounces per ton.

SILVER ISLET CONSOLIDATED MINING AND LAND COMPANY.—This company's operations on Edward's Island are assuming substantial proportions. A new shaft house, boarding house, warehouse, stable, blacksmith shop, engine house and office have been erected since November 1st. A force of 12 miners is employed. The shaft is down 50 feet on the course of the vein, which is 3 to 3½ feet wide. Drifting will be commenced at a suitable depth. For the first level the vein carries considerable arsenical silver ore, and looks very promising.

WEST END MINING COMPANY.—A force of 37 miners is now employed at this mine. A new shaft is being sunk near the east end of the property. It is now 40 feet deep and is in good ore. Drifting is being continued east and west from No. 2 shaft, the vein matter averaging 60 ounces of silver to the ton.

ENGLAND.

A cargo of 2,700 tons of coal has recently arrived at Liverpool, from Sydney, New South Wales, according to the *Iron and Coal Trade Review*. This fuel is said to yield remarkable results in the way of gas production, its efficiency in this respect being at the rate of 18,000 cubic feet per ton. It is for this purpose that it has been imported by the Liverpool Gas Company. The coal is thought to be in reality petroleum shale. One strong recommendation in favor of the mineral is that practically the whole of it can be used in the production of gas, the residual product being an inconsiderable quantity of white ash, which is not the characteristic of the coals found in New South Wales. On the contrary, an analysis of eleven samples of these coals shows that their percentage of ash ranges from 6·80 to 20·44, comparing in this respect somewhat unfavorably with the New Zealand coals. The same remark applies to the volatile hydro-carbons found in both descriptions of fuel.

MEXICO.

DURANGO.

MEXICAN IRON MOUNTAIN COMPANY.—At a special meeting of the stockholders of this company at Des Moines, Ia., on the 16th inst., the board of directors was given full power to sell the property of the company if a suitable offer were made. The company's property consists of the famous Iron Mountain at Durango and 43,000 acres of land adjoining. The iron ore deposit in the mountain is said to be a mile long, a half to three-quarters of a mile wide and 400 to 600 feet deep. It is easily worked, and both hematite and spiegel ores are found in the same vein, with an average of 60% iron. The property is partially developed, a large blast furnace, gas producer, rolling-mill and machine shops having been built. The company is capitalized at $5,000,000. An English syndicate is asking an option on the property. An offer of $3,000,000 cash is said to have been refused.

SONORA.

ORO GRANDE COMPANY.—The suit in the Superior Court in San Francisco by Alvinsea Hayward and others to recover the money paid Aguayos Brothers, of Mexico, for the Mulatos mine, to which reference was made in the columns of the ENGINEERING AND MINING JOURNAL at the time, see Vol. xlix, pp. 131, 381, 393, has been dismissed, as the Aguayos have agreed to pay the plaintiffs $1,427,000 of the purchase money, and $60,000 additional.

It will be remembered that the firm of Hayward & Hobart purchased the property in September, 1889, paying Aguayos Bros.' agent in San Francisco $710,000 in cash and $865,000 in promissory notes. When they took charge of the mine it was discovered that the output fell far below their expectations and a suit was commenced against Aguayos Bros.' agent to recover the moneys paid on the ground that the mine had been salted.

DIVIDENDS.

Boston & Montana Mining Company, dividend No. 11 of $ per share, $125,000, payable February 20th at the office of the company in Boston, Mass. Transfer books close January 27th and reopen February 2d.

Central Mining Company, dividend No. 30 of $1.00 per share, $20,000, payable February 2d, at the office of the company, No. 76 Wall street, New York City.

Consolidation Coal Company, dividend of $2 per share, payable January 31st, at the office of the company, No 71 Broadway, New York City.

Daly Mining Company, Dividend No. 47 of 25 cents per share, $37,500, payable January 31st, at the office of Messrs. Lounsbery & Company, Mills Building, New York City. Transfer books close January 26th and reopen February 1st.

Homestake Mining Company, dividend No. 150 of 10 cents per share, $12,500, payable January 26th, at the office of Messrs. Lounsbery & Co., 15 Broad street, New York City.

Ontario Silver Mining Company, Dividend No. 176 of 50 cents per share, $75,000, payable January 31st, at the office of Messrs. Lounsbery & Company, Mills Building, New York City. Transfer books close January 24th, and reopen February 1st.

Quincy Mining Company, dividend No. 45, of $5 per share, $200,000, payable February 26th, at the office of the company, No. 35 Congress street, Boston, Mass. Transfer-books close January 31st, and reopen February 27th.

ASSESSMENTS.

COMPANY.	No.	When levied.	D'l'nq't in office.	Day of Sale.	Amn't per share.
Adelaide Cop., Nev.	2	Dec. 27	Jan. 31	Feb. 18	.06
Brunswick, Con., Cal	1	Jan. 8	Feb. 10	Mar. 6	.02
Con. Imperial, Nev..	30	Dec. 13	Jan. 13	Feb. 9	.05
Crown Point, Nev..	53	Dec. 3	Jan. 7	Jan. 28	.50
Del Monte, Cal.....	4	Jan. 5	Feb. 9	Mar. 3	.20
Exchequer, Nev.....	30	Dec. 11	Jan. 15	Feb. 5	.25
Hale & Nor., Nev....	97	Jan. 7	Feb. 11	Mar. 4	.50
Head Center Con., Ariz.....	5	Dec. 12	Jan. 15	Feb. 6	.03
Kentuck, Nev.....	..	Dec. 29	Feb. 3	Feb. 25	.35
Locomotive, Nev....	..	Dec. 1	Jan. 22	Feb 10	.05
Lone Star Con., Cal.	2	Dec. 29	Feb. 7	Mar. 2	.00½
Potosi, Nev.....	35	Dec. 16	Jan. 20	Feb. 10	.50
Riverside, C	1	Dec. 11	Jan. 12	Feb. 2	.10
Sierra Nev., Nev	98	Jan. 2	Feb. 5	Feb. 24	.30
Union Utah	..	Dec. 6	Jan. 10	Jan. 28	01
Utah Con., Nev.....	11	Dec. 9	Jan. 19	Feb 9	.25

MEETINGS.

Atwood Mining Company, at Room 22, No. 170 Broadway, New York City, February 4th, at 2 P. M.

Denver City Consolidated Silver Mining Company, at the office of the company in Leadville, Colo., March 1st, at 12 o'clock noon.

George's Creek Coal and Iron Company, at the office of the company in Baltimore, Md., January 30th, at 1 P. M.

Justice Mining Company, at the office of the company, in Aspen, Colo., February 9th, at 5 P. M.

MINING STOCKS.

For complete quotations of shares listed in New York, Boston, Salt Lake City, San Francisco, Baltimore, Denver, Kansas City, Minneapolis, St. Louis, Pittsburg, Birmingham, Ala.; London and Paris, see pages 133 and 134.

NEW YORK, Friday Evening, Jan. 23.

As predicted in our report of last week, the mining stock market is being plunged deeper and deeper into the slough of despondency. One would have inferred from the list of quotations last week that hard pan had been reached, and that prices, if they could not rise in the view of the pending silver legislation, might be at least maintained. This, however, has not been the case. The Comstocks, which made so encouraging a spurt at the close of last week, and upon which so much hope was based, have commenced to feel a reaction.

Public distrust has been shown by a lack of inquiry which was manifest last week, and by a general desire to unload. This feeling has not had any marked expression in action, and consequently brought out but little stock. Enough was offered and taken to swell the sales to 38,937 shares as against 42,431 shares of the previous week. Of these shares 11,787 were of dividend paying companies as against 7,921 shares of last week. The endeavor to realize has had a tendency to lower values all along the line. With few exceptions there is hardly a stock on the list which was traded in during the week that shows any increase in prices, and very many have experienced a marked decline. In addition the market has developed a decidedly unsettled spirit manifest in widely fluctuating values at the different sales of a stock in a day.

There was very little inquiry for copper stocks. There were three single sales of Lake Copper Company's shares, as follows: Atlantic, 50 at $15.38; Calumet and Hecla, 10 at $251.50; Franklin, 100 at $17.13. The prevailing opinion on the exchange is that coppers have not reached the bottom figures. By consulting our Boston letter the reader will learn that the present market for this class of stocks seems depressed. In addition to the general decline of Comstocks noted previously, might be mentioned the indisposition on the part of buyers to invest—comparatively few bids being made. Of the stocks brought out the following summary is made: Consolidated California and Virginia experienced light sales, opening the week at $4, 10c. below last week's closing, declining to $3.75, rallying and closing at $3.90 on Thursday. Crown Point was inactive. One sale of 100 shares brought a price $1.80, 15c. below last week's closing. Gould & Curry sold on Tuesday at $2.60, a gain of 5c. which price was maintained. This gain was due to the strike reported to have been made last week in the mine. For further particulars see our mining columns. Ophir sold 50 shares on Wednesday at $3.10, a decline of 45c. Sierra Nevada opened on Wednesday at $1.70, a decline of 20c., rallying and closing at $1.80 on Thursday on small sales. Yellow Jacket gained 5c., closing on Thursday at $2.25. Alta opened at 75c. a gain of 5c. dropping the gain and closing at 70c. on Wednesday on light sales. Best & Belcher had rather a vacillating career during the week. It opened on Tuesday at $2.35, a loss of 30c., rose to $2.65, dropped to $2.50, and closed on Friday at $2.70 on moderate sales. Chollar experienced one sale of 100 shares on Friday, at $2 50 a loss of 10c. One lot of 1,000 shares of Comstock Tunnel sold on Tuesday at 20c., a gain of 1c., which figure was maintained; sales moderate. Mexican experienced a marked gain; opening at $2.60, a climb of 10c., it declined to $2.45, recovered and closed at $2.70. Occidental opened at 85c. and dropped to 70c., a net loss of 20c. Union Consolidated opened at $1.65, a loss of 35c., recovering and closing at $1.80. Utah opened at 60c., the lowest price of the week, recovering and closing at 85c., last week's figure.

The Bodie stocks, as was the case last week, were hardly in the market. There seemed to be no inquiry for them, and the two sales recorded below, were floaters which were gathered in at the buyers prices. Bodie Consolidated experienced one small sale at 90c., a drop of 5c. Standard Consolidated will hold its annual meeting in San Francisco on the 17th prox. The directors announced that it is only during the past two months that the product has been nearly a normal one, *i. e.*, about $20,000 in product as compared with $12,000 in expenses. The stock was quoted on Wednesday for the first time in several weeks. It opened at $1.75, and closed at $1.50 on the same day. The sales aggregated 300 shares, Bulwer sold at 25 cents, The surplus on hand January 1st was $6,000. For further data concerning this property the reader should consult our mining columns.

The Belmont gold mine, of Sutter Creek, Ama-

dor County, California, was admitted to the Exchange on Wednesday [for data set forth in the application see ENGINEERING AND MINING JOURNAL, January 10th]. It was started at 30 cents, which figure was raised to 31 cents. The sales aggregated sales of 3,600 shares. Upon its admission Sutter Creek, the company it succeeded was, by request, stricken from the list of active stocks. It received its last sales on Tuesday at $1.10. As the company was stocked at 100,000 shares, all of which were issued, its value, according to last quotations, is $110,000. Its successor, Belmont Gold, is stocked with 500,000 shares, of which number 400,000 are exchanged, or in the words of the petition, paid for the property, the basis being 4 for 1. The setting aside of the 100,000 shares as a treasury stock must be considered as a stock assessment of 20% of the value of the property. Allowing that the stockholder obtains the benefit of the stock assessment, the value of his shares on the basis of reorganization is 27 cents. The fact that it starts off at 30 cents and raised to 31 cents, may be indicative of the fact that the change is beneficial for the stockholder, or it may be due to manipulation. An inquiry of H. R. Lounsbery, agent, does not elicit any very tangible statement from that gentleman concerning the disposition of the 100,000 shares of treasury stock. He may be quoted as saying that 33,000 shares had been sold and paid for—the reporter could not learn whether this was treasury stock— and that the company intended to add 10 stamps to its 10-stamp mill. The career of Belmont Gold Mine stock will be watched with no little interest. The Amadors held their own during the week, enjoying the usual number of sales. Astoria was active at 4c., the ruling price of last week. Sales of 2,400 shares on small lots are recorded. Middle Bar was active; the stock opened at 4c., a decline of 1c., and advanced to 9c. on Wednesday, closing at 4c. to-day.

Brunswick ruled at 9c. during the week, closing at 8c., a decline of 1c. The sales aggregated 3,330.

Of the Colorado stocks, Chrysolite was inactive at 23c., a decline of 2c. Freeland on sales of 1,300 shares dropped 1c. to 17c. Of Leadville Consolidated, 1,000 shares were sold at 12c., a decline of 1c. Little Chief was fairly active at 35c., a decline of 1c. Silver Cord experienced one sale, the first in a number of weeks, at 29c.

Castle Creek sold 200 shares at 3c. Phoenix of Arizona, was very active during the week. It opened at 70c., an increase of 10c., closing at 64c. on sales of 4,100 shares.

Rappahannock experienced sales of 1,000 shares at 2c.

El Cristo sold 100 shares at 50c., a drop of 5c.

Mutual mining and smelting was active. It opened at $1.50, a gain of 10c, closing at $1.45.

Horn Silver developed an embryoic crisis on Thursday. The report that the company had drawn on its large surplus to meet its October dividend seemed to have just reached the enlightened members of the exchange. The bears used it to hammer the price from $3.00 down to $2.70. The quotations fluctuated considerably all day and on Friday in several instances going as high as $2.80 and $2.90, finally closing at $2.75; 3,377 shares of stock were brought out. Enquiry at the office elicited the fact that the company thought it best to draw on this reserve fund to meet the dividend rather than to sell its ore, of which it has a large quantity, at a sacrifice under the ruling conditions of the market. As near as we can learn the company is in as good financial shape as ever.

Of the Dakota stocks, Caledonia sold 700 shares at 55c., a loss of 5c. There were no sales in Father de Smet, although there were many inquiries for the stocks. The bidding price is 20c., the asking price 40c.

Boston. Jan. 22.

(From our Special Correspondent.)

The market for copper stocks the past week has shown a downward tendency, with very little activity. The speculative fever seems to have abated, and orders to sell are more abundant than those to buy, consequently prices droop and are gradually getting to a lower level, which may eventually prove attractive to purchasers, and create a lively market. At present the outlook is not particularly favorable for such a result.

The dividend paying mines show quite as much falling off in prices as the speculative list, and the uncertainty regarding the future of ingot copper serves to add to the decline.

Calumet and Hecla declined $10 the past week from $260 to $250, and any pressure to sell it would carry it down still lower.

Tamarack lost $6 from last week's closing, selling at $145—Quincy has declared a $5 dividend, and the stock declined from $93 to $89.

Boston & Montana sold off to 39¼, a decline of $2. This is the most active stock on the list, and considering the large dealings in it the price has been pretty well sustained. A dividend of $1 was declared on the 22d inst. This is a reduction of 50c. below the usual dividend.

Butte & Roston declined to 14⅝, and is fairly firm compared with the balance of the market.

Osceola declined from 35⅝ to 33¾, with a recovery to 34¼. There is not much pressure to sell, the stock being largely held for investment.

Atlantic declined on small sales to $14½, with a rally to $15.

Centennial has been very quiet this week, selling down to $16, a decline of ½.

Kearsarge sold up to $13 early in the week, but to-day it was very weak on pressure to sell and declined to $10¼.

Franklin has been quite strong at $17½@$17, losing ¼ to-day on sale of 200 shares.

National quite steady at $3½@¾.

The much-talked-of assessment on Allouez has at last been announced. The directors met yesterday and decided that it was for the best interests of the stockholders to levy an assessment of 50c. per share, payable February 26th. This will give the company $40,000, and enable it to open up the Calumet lod.. The stock declined yesterday to $1⅝, but quickly rallied and sold at $2 to-day.

Santa Fe advanced on bullish rumors regarding the mine to 47½c. The silver stocks still remain dull and inactive, although there has been more demand for Catalpa and quite a large lot has changed hands at 30c.@32½c. Crescent sold at 12½c. and Napa quicksilver at $4.

By Telegraph.—Quincy, $98; Franklin, $15¾; Montana, $40; Osceola. $34; Tamarack, $140; Atlantic, $13¼, Allouez, $21.

Denver. Jan. 19.

(From our Special Correspondent.)

The market steadily improved during the latter part of the week, and from the sales of Saturday and to-day indications are that it will continue to do so. Orders from the east, not only for the dividend payers, but for many of the low-priced stocks, and prospects have increased in volume, this has had a very perceptible effect upon the market. High grade ores are being more freely bought, and, therefore, being able to increase their outputs, owners are feeling better over future prospects.

St. Louis. Jan. 22.

(From our Special Correspondent.)

The St. Louis Mining and Stock Exchange experienced another dull week. All business was slack and but little trading was indulged in.

The weekly output of the Granite Mountain amounted to 55 bars containing 60,900 ounces of silver and 120 ounces of gold. The stock had a bid of $42.75, but no sales during the week. Silver Age opened the week at $1.70, but before the end of the week had fallen to $1.60; 500 shares of stock were sold. Thirty-five tons of Silver Age ore sold for $1,277.88. The new machinery for the Silver Age has arrived at the mine and is now being put in place.

As usual, the three leading stocks were Central silver, Elizabeth and Breen. The first named opened at 5½c., and during the week reached 10c., but at present is quoted at 9c. The amount of business transacted amounted to 5,400 shares.

Breen started in at 90c., but at present brings only 85. Number of shares sold amounted to 4,900 shares.

Elizabeth opened at $2.35, declined to $1.42½, but before the week was out had fallen 10c., and is now quoted at $2.32½. It was in good demand the whole week, and 5,400 shares changed hands.

Yuma, which for some time has been quite neglected, was taken up this week, and with an opening bid of 50c. went up as high as 58¾c. At present it brings 55c. During the week 1,300 shares were sold. Its advance and demand are greatly owing to the successful completion of arrangements for their pipe line

Bimetallic is bid at $33, but no business being done. Buyers and sellers are too far apart.

La Union transacted a good amount, and 4,800 share were sold at 1½c.

American & Nettie was another stock to suffer a decline, and from 45c. bid has dropped to 42½c. During the week it went as high as 47½c. Sales, 200 shares.

One thousand four hundred shares of Aztec were sold this week at from 10c.@11c.

Mountain Key transacted no business this week, though prices advanced from 38¾c. to 40c.

Little Albert had 1,000 shares sold this week. Opening at 21¼c., the market soon fell to 18¾c., but it regained its lost ground during the latter portion of the week, and now brings 21¼.

Montrose was very quiet this week, no sales being made. Stock advanced 5c., and is now quoted at 57½c.

Gold King is quoted at 9c. It started in at 7½c., and at one time reached 9½c. One hundred shares sold.

Small Hopes was very dull, and is not changed from opening price, 82½c. No sales.

San Francisco. Jan. 15.

(From our Special Correspondent.)

The annual election of the Stock Exchange Board was held on Monday, the following officers being re-elected: J. M Shotwell, president; A. F. Coffin, vice-president; O. V. Walker, chairman; F. W. Hadley, secretary; G. I. Marye, treasurer; Committee on Membership, G. C. Hickox, J. Patterson, W. Edwards, C. D. Laing, J. B. Dyer, L. Marshall and C. H. Stoutenborough.

The stagnation which distinguished the closing of the year 1890 has given place in this the opening month of the new year, to a more active market than has obtained for some months. Potosi, Chollar and Bullion, the favorites hitherto, have been relegated to a back place, and Consolidated California & Virginia and Gould & Curry are now the principal speculative stocks. The dealings in the two named have been very large, and in Mexican, Ophir, Sierra Nevada and Union Consolidated the transactions have also been quite important, they moving in sympathy with the leaders. Although the general trend of the market during the week has been upward, a bearish element has made itself felt, and consequently the fluctuations in values have been rapid, and ranging from 5 to 20 cents—sufficient to make things wear a rosy aspect for the ubiquitous "chipper." Indeed more than one broker has followed the example of the "chippers" and curbstone brokers, who oscillate between the two boards, and have taken advantage of the difference in values in the several sessions of the board. On Monday morning Con. Virginia was selling for $3.75, and Gould & Curry for $2.75, and in the afternoon Con. Virginia was in demand at $4.20, and Gould & Curry at $2.95. The bonanza stock touched the $4.80 point and to-day is selling freely at $3.75. Gould & Curry has not advanced above $3.00, and this morning is selling at 50 cents decline. The north and middle stocks have shown considerable strength, and apart from the gambling in the leaders, have generally sold stronger during the week. From whatever cause, strong hands are moving in the market, and whether current reports of developments in the mines are correct or the present movement is preliminary to another "deal" is not yet apparent. At the opening of the week Savage sold for $1.90 and jumped to $2.15, since which it has been the steadiest stock on the list. The hope, and, indeed, the general belief, is that the operations in Gould & Curry and Hale & Norcross will culminate in something good being found in the Savage ground.

The Tuscaroras, Bodies and other outside stocks have been quite neglected, the dealings being insignificant. Bodie has sold firm at 85–90 cents and Commonwealth at 80 cents.

Chicago.

(From our Special Correspondent.)

Nothing has yet been done toward incorporating or organizing the Chicago Mining and Metal Exchange, about which there was so much talk last summer and autumn, and it is not likely that there will be anything done now until the financial skies are clearer. The Chicago Mining Exchange, however, has been incorporated. This will furnish a market for stocks only and is modeled after the New York Exchange, Chicago Board of Trade, Colorado Mining Exchanges and other associations of like character. The exchange has no capital stock. Its promoters are gentlemen well known in Chicago, whose names promise success to the enterprise. It is expected that business will be commenced during the coming month, with a number of mining stocks listed. The incorporators are Messrs. V. A. MacDonald, formerly of the Denver Exchange; G. H. Browne, D. T. Jarvis, B. Friend, of B. Friend & Co., and H. B. Browne.

Lake Superior Iron and Gold Stocks.

IRON MINING STOCKS.

Name of Company.	Par value.	Bid.	Asked.
Anvil Iron Co		$3.00	$3.25
Ashland Iron Co	$25.00	60.00	65.00
Aurora Iron Co	25 00	8.50	9.50
Brotherton Iron Co		3.00	3.25
Champion Iron Co	25 00	80.00	85.00
Chandler Iron Co	25.00	38.00	39.50
Chicago & Minn. Ore Co	100.00	113.00	117.00
Cleveland Iron Co	25.00	17.00	18.00
East New York Iron Co		2.00	2.25
Germania	25.00	11.50	12.00
Jackson Iron Co	25 00	110.00	125.00
Lake Superior Iron Co	25.00	70.00	75.00
Milwaukee Iron Co	25.00		
Minnesota Iron Co	100.00	77.00	78.00
Montreal Iron Co	25.00	9.00	10.00
Norrie (Metropolitan)	25.00	70.00	72.00
Odanah Iron Co	25.00	17.00	18.00
Pittsburg Lake Angeline Co	25.00	160.00	170.00
Republic Iron Co	25.00	27.00	29.00
Section "33" Iron Co		20.50	21.00

GOLD MINING STOCKS.

Name of Company.	Par value.	Lowest.	High.
Gold Lake Mg. Co	*	....	....
Grayling Gold & Silver Co	$25.00*	....	....
Michigan Gold Co	25.00*	....	....
Peninsula Gold & Silver Co	25.00*	....	
Ropes Gold & Silver Co	25.00	$2.00	

* Quotations nominal.

PIPE LINE CERTIFICATES.

(Specially reported by Messrs. WATSON & GIBSON.

The petroleum market this week has been a little more active, and there has been a disposition to buy both National Transit and Buckeye certificates. The extent of the purchases has not been large, and so far as there has been any spirit in the market at all it has been of a bullish character. The Standard has acquired increased control of the Ohio field, and their influence in the market for both crude and refined petroleum cannot be successfully challenged by anybody. If they wish to mark up the prices of Pennsylvania & Ohio oil, the public will not stand in their way, because the public have no oil; if they wish to put the prices down the public will not interfere by buying any; if they wish to make an active market, running it up and down, they can do that. Until they do engage actively

in the speculation, it is foolish for any individual to attempt to make money out of the market.

NEW YORK STOCK EXCHANGE.

	Opening.	Highest.	Lowest.	Closing.	Sales
Jan. 17.....	....	....	....	....	.....
19.....	....	....	....	....	.....
20.....	....	....	....	....	.....
21.....	73	73	73	73	10,000
22.....	74	77½	74	77	115,000
23.....	77½	77⅞	77⅝	77⅝	27,000
Total sales in barrels....					152,000

CONSOLIDATED STOCK AND PETROLEUM EXCHANGE.

	Opening.	Highest.	Lowest.	Closing.	Sales.
Jan. 17.....	73¼	73¾	73¼	73¾	17,000
19.....	73¼	74	73	73¾	37,000
20.....	73⅜	74	73¼	74	47 000
21.....	73⅜	73⅝	73⅜	73⅝	35,000
22.....	74⅜	78½	74⅜	77½	169,000
23.....	77¼	77¾	76⅛	76¼	63,000
Total sales in barrels.....					368,000

COAL TRADE REVIEW.

NEW YORK, Friday Evening, January 23.

STATEMENT of shipments of anthracite coal (approximated) for the ten days ending January 17th. 1891, compared with corresponding period last year:

Regions.	Jan. 17, 1891.	Jan. 18, 1890.	Difference.
Wyoming Region. Tons	410,633	231,486 Inc.	179,147
Lehigh Region "	130.661	94,534 Inc.	36,127
Schuylkill Region "	221,995	158,574 Inc.	63,421
Total..... Tons	763,289	484,594 Inc.	278,695
Total for year to date Tons	1,740,504	1,401,866 Inc.	338,638

STATEMENT of anthracite coal shipments for month of December, 1890, compared with the corresponding period last year. Compiled from returns furnished by the mine operators:

	December, 1890.	December, 1889.	Difference.
Wyoming Region	1,672,748.12	1,392,029.18 Inc.	280,718.14
Lehigh Region...	487,209.15	482,664.00 Inc.	4,545 15
Schuylkill Region	905,249.19	861,040.15 Inc.	44,209.04
Total.....	3,065,206.46	2,735,733.33 Inc.	329 472.33

	For year 1890.	For year 1889.	Difference.
Wyoming Region	18,657,694.14	18,647,925.09 Inc.	9,769.05
Lehigh Region...	6,329,658.07	6,285,420.16 Inc.	44,237,11
Schuylkill Region	10,867,821.18	10,474,364.00 Inc.	393,457.18
Total	35,855,173.39	35,407,709.25 Inc.	447,463.34

The stock of coal on hand at tide-water shipping points December 31st, 1890. was 535,652 tons; on November 30th, 1890, 608,479 tons; decrease, 72,827 tons.

Of the total production in 1890, 52·04 per cent. was from the Wyoming Region; 17 65 per cent. from Lehigh Region, and 30·31 per cent. from Schuylkill Region.

Eastern competitive tonnage, including all coal which for final consumption or in transit reaches any point on Hudson River or the bay of New York, or which passes out of the Capes of the Delaware: In 1889, 12,217,862 tons; in 1890, 11,792,317 tons; decrease, 425,545 tons.

PRODUCTION OF BITUMINOUS COAL for week ending January 17th and year from January 1st:

EASTERN AND NORTHERN SHIPMENTS.

	1891. Week.	1891. Year.	1890. Year.
Phila. & Erie R.R...	3,113	7,405	7,655
Cumberland, Md.....	§114,425	114,425	202,764
Barclay, Pa.....	*2,580	7.756	3,725
Broad Top, Pa.....	13,533	25,806	27,878
Clearfield, Pa.....	84,568	242,640	232,986
Allegheny, Pa.....	23,438	61,643	57,034
Beach Creek, Pa.....	*41,672	132,444	69.624
Pocahontas Flat Top.....	*37,241	90,859	92,936
Kanawha, W. Va.	†24,001	24,001	98,473
Total.....	344,580	706,979	793,075

* Estimated
† Week ending January 7th.
§ For ten days ending January 10th.

WESTERN SHIPMENTS.

Pittsburg, Pa.....	20,196	68,313	49,309
Westmoreland, Pa.....	37,540	96,803	89,092
Monongahela, Pa.....	17,683	34,047	14,012
Total	75,419	199,163	152,413
Grand Total.....	419,999	906,142	945,488

PRODUCTION OF COKE on line of Pennsylvania R. R. for the week ending January 17th, 1891, and year from January 1st, in tons of 2,000 lbs.: Week, 94,517 tons; year, 228,634 tons; to corresponding date in 1890—285,606.

Anthracite.

The market during the week has displayed a weakness which, although not entirely unexpected, has caused considerable apprehension among the operators, and has given rise to all sorts of bullish reports, some of which are as ridiculous as they are bullish. The trade had some difficulty in maintaining prices, although it can be said that the scale has not been materially cut. A few of the small operators seemed possessed with the desire to realize, and are offering stocks on the market. The companies generally are holding their stocks, filling contracts and accepting at schedule rates, the business offered. The trade in general can be said to be very unsettled—a state of affairs not unusual at this season of the year. The adjustment of the yearly output percentages, railroad rates, contracts, and the determination of a scale, are all features of the trade, which are now in their formative condition. These conditions inspire the agent with the wish that he could lift the veil which conceals the future. Now that the month has nearly past, it will not be out of place to take a retrospective glance. One dealer says: "The January trade has not been what was expected, but the season, taken as a whole, has been as good as we have ever had. The cold weather has completely absorbed supplies held by consumers, and at the same time the stocks of the retailers. This latter class of Jersey City, Brooklyn and New York are now buying small lots. The trade from the wholesaler's standpoint is in a fairly good condition, and by regulating output the present year will be a good one."

We have heard all sorts of reports during the past week concerning contemplated coal combines and the readjustment of the percentage outputs of the different companies. Some of these may possess a grain of truth while others will end in smoke. There is one movement on the tapis which seems to be very popular with all concerned, and from which something tangible may possibly emanate. It is the old time effort of interested parties to form a general pool by means of which the coal companies of the different railroads traversing the coal regions will absorb the product of different independent operators, thereby eliminating the latter class from the market and concentrating the trade. The operators, so far as can be learned, are perfectly willing to treat with the companies, as an arrangement of this kind would save them the trouble of marketing their product and of carrying contracts. The railroad companies as in the past, are inclined to favor the project. The great stumbling block will be the difficulty in forming a complete federation between the companies and operators and among the companies. There is always an element in every trade which, controlled by a desire to do a little better, will hold out. The project has not developed sufficiently to bring out this spirit. A number of operators and representatives of the railroads have expressed themselves to the writer as being in favor of an organization of this kind, based upon figures of previous business done.

A bull report gained considerable currency during the week, being in effect that definite arrangements had been made by various companies to raise the schedule price so that an advance would go in effect February 1st. As near as we could learn from numerous interviews, the companies are all quite willing for the present to concentrate their efforts for the purpose of keeping the price where it is, rather than trying to force rates to a higher scale. A meeting will be held next Tuesday for the consideration of the different features of the trade, but if an action of this kind is contemplated it will be hardly taken so early in the year, for the reason that existing contracts, and the present unsettled condition of railroad rates would prevent any definite concentrated action. The matter of a readjustment of output percentages is receiving its annual consideration. It has been stated that the output for the year would be fixed on a basis of 37,000,000 tons. There may be something in this, but from all that could be learned in trade circles, the report is premature.

It is probable that the percentage outputs of the different operators will not be materially different from those of last year, although something of an effort is being made to effect a readjustment in certain quarters. We may be able to say something on this point at a later date.

Contracts are reported let by the Reading Railroad Company for the Port Reading Railroad, 20 miles from Bound Brook to tidewater at Kill von Kull. The construction of this road will enable the Reading Company to deliver 1,500 000 tons of coal at tidewater by its own line instead of by the Jersey Central.

The continued scarcity of soft coal still has the tendency to stimulate the sale of small sizes of anthracite. Pea and buckwheat are in greatest demand. While coal is being offered by a few at less than scale rates, we cannot obtain data sufficiently authentic to change our quotations of last week, They are as follows, f. o. b.: Stove, $4.15; egg, $3.90; broken, $3.65; chestnut. $3 75. The smaller sizes still continue in best demand. Of these we quote: Buckwheat, Lehigh, $2; pea, $2.60 to $3.

Bituminous.

The two branches of the coal trade are at extremes with one another. Both are in an unpleasant condition, the one being dormant and the other is feverish. Although there seems to be a tendency in one to equalize the condition of the other, it is so faintly manifest that it cannot be considered a feature of the week's market. There seems to be a feeling that the soft coal scare is dying out, and that conditions spoken of in our last week's report will gradually work the trade into a normal condition. The cry is still for more coal. Most of the stock that is moving is used in meeting contracts. Every dealer is oversold. The consumer who was not fortunate enough to have contracted for his supplies meets his wants the best he can. Fancy prices are the rule rather than the exception, but even were they to be doubled very little more coal could be brought out just at the present time. The railroads still continue to appropriate such supplies as they desire to use. This action, while it does not, in most cases, materially decrease the tonnage of an operator, renders uncertain his supplies, and has a tendency to interfere with his shipping arrangements at tide water. Reports from the producing regions seem to indicate that affairs will shortly resume their normal condition as regards to output. In the Clearfield region during the week the transportation was as easy as it has ever been known to be, and in consequence large stocks were placed at tide water. Furnace and coke oven supplies are now coming into the market in a way which will make themselves felt.

In the Clearfield region it was decided by the miners that if the operators would not meet the advance of 5c. a ton they would arbitrate. The matter was decided on Thursday by the operators refusing to meet the demands, and the matter is now left to a board of arbitration. The valley furnace managements of Ohio have formed an association, and demanded of the railroads and coke makers a concession in rates, backing up their demand by shutting down their plants. They ask a reduction of 25c. to $1.65 on coke, and an equivalent decrease in freight rates. No information can be obtained relative to the probable action on the part of the railroads. The coke operators have about decided not to return their rates from $1.90 to $2.25 in February, as was their intention last week, but to keep the figure at $1.90, meeting any demand for a less price by a curtailed production, the intention being to bring prices up to $2.15 in March. Eastern furnaces have taken their usual quota for January at $1.90.

It is reported that Pittsburg coke operators are seriously considering a proposition to buy out the Connellsville plant of N. J. Rainey of Cleveland for $1,000,000. The reason given is that Mr. Rainey is an independent operator. While this latter fact is true, it is generally known that he does not interfere with the trade. Of the 935 ovens in his plant but 53 were out of use—a much less percentage of his total number of ovens than is the case with the other operators.

During last week, of the 16,000 ovens in the Connelsville district, 6,000 were out of blast.

The question of railroad rates is one which is still bothering sales agents. As far as could be learned no new rates have been adopted.

The Seaboard Association is in *statu quo*.

No new coal contracts are being made. Prices, if any can be said to exist, are about the same as last week. We quote: At Baltimore, $2.85 f. o. b.; at Philadelphia, $2.95; at New York, $3.30, and alongside, $3.50. We look for but little change in the market during the present month.

Boston. Jan. 22.

(From our Special Correspondent.)

The anthracite coal market has a fair tone with a most promising outlook for the near future months. Coal is in fair demand, the retailers buying to piece out their stocks, which are being decreased at a fair rate. Agents are not disposed to sell below circular prices; but it is not an uncommon thing to note sales of stove coal at $4. They realize that there is an accumulation of stocks at tidewater. This fact does not depress them, as they are confident of a good spring demand. The demand which has prevailed during the past few weeks for domestic sizes has been for the time satisfied.

The scarcity of bituminous coal is a feature of the market. The tone, however, is much easier owing to a decided falling off in the demand. Agents report slightly larger stocks at tidewater and are better able to make shipments. Several lots on cars have been sold at $4.60 and some still lower. Gas coals are not in large demand. During the recent scare most of the gas companies bought heavily of Cape Breton and some of the poorer grades of West Virginia, and to-day are in possession of fair supplies. Contract time is near at hand, but as yet none of any great magnitude have been placed.

The tonnage demand is small, and 75@85c. is quoted from New York, $1.25@$1.50 from Philadelphia and $1.15@$1.25 from Baltimore. The freak of the Philadelphia rate is not destined to last, but it is a fact that $1.50 has been commended.

The retail demand continues fair, although the weather has been rather mild. Dealers have moderate stocks on hand, and look for a good February trade.

The receipts of coal at this port for the week ending Jan. 18 were 21,451 tons of anthracite and 20,160 tons of bituminous, against 22,560 tons of anthracite and 18,255 tons of bituminous for the corresponding week last year. The total receipts thus far this year have been 59,170 tons of anthracite and 31,475 tons of bituminous, against 53,506 tons of anthracite and 31,731 tons of bituminous for the same time last year.

Buffalo. Jan 22.

(From our Special Correspondent.)

There is the usual winter consumption of coal for home trade and nearby points, and a fair number of orders for distant places. Prices are without any change, and no likelihood of any occurring un-

til spring. Stocks are fully adequate for all requirements.

The Bituminous coal trade is in good shape; the schedule of rates are at least 10c. per ton higher since January 1st. Screened nut, nut and slack mixed, and slack, are difficult to obtain, and quotations of these sizes are omitted by dealers. The demand is excellent, and no difficulty is experienced in getting rid of consignments directly on arrival. A dealer says: "There is probably not 20 carloads unsold at this time on all the tracks in this city. The supply, therefore, may be quoted as quite limited. The trade has not been in such a satisfactory condition for years.

The following statement may be deemed official: "The indications are that the Delaware & Lackawanna's north pier coal chutes and trestles at Buffalo must be surrendered or taken down, and quite soon, too. The fact that the company is still in possession, and that it has always pulled through all the storms raised against its occupancy of the north pier, is now all that appears to be left in its favor." Major Stickney, the United States Government engineer, in charge of the harbor work, says: "A notice of ejectment was served about a month since on the company," and adds, "I do not know how it is to be done and I have nothing to do with it; but I have received some inform tion on the subject. My last notification was that the matter had been placed in the hands of the Department of Justice with orders that the Lackawanna Company vacate the pier. In this case the War Department, with which I am connected, has nothing more to do with it. The Lackawanna Company has been in occupation since 1878 or about that time under a license from the War Department. This was a revocable license, and I suppose it must have been revoked before the present movement was started."

In connection with the preceding, the House Committee on Rivers and Harbors on January 13th, by unanimous vote, directed "an adverse report to be made on the bill introduced December, 1889, authorizing the Delaware, Lackawanna & Western Company to maintain upon the north pier at Buffalo coal trestles and pockets for the transfers of coal to vessels." The company claims that it has a virtual right to the property, whether it can induce the Government to acknowledge it or not; that it has, in fact, created all the land in that vicinity by filling in a marsh or small bay.

The Buffalo Dock & Connecting Railroad has received a grant from the State which will enable it to control the finest lake frontage terminal in the city, with but little expense, namely, the north bank of the Erie canal, and the harbor to a point near Fort Porter, nearly two miles in length. Nearly all the railroads of Buffalo will be benefited by the construction of this line, and shippers and dealers also.

Some very important improvements are contemplated in the Delaware & Hudson Coal Company's property at this port.

The Grand Trunk Railway Company has asked for tenders for the supply of locomotive cars from April 1, 1891, to March 31, 1892. No quantity is specified, but the bids will be received from now until February 10th, inclusive, by Mr. L. J. Sargeant, the general manager, at Montreal, Canada.

Chicago. Jan. 21.

(From our Special Correspondent.)

The general conditions of the anthracite market at this center are about the same as those reported last week; prices continue easy, and the demand is only for car lots. The outlook is not as promising as it was a month ago, as the continued mild weather has been very discouraging to local dealers and shippers, yet some claim that the general market is in better condition than it has been for a number of years past, also that it now stands on a firmer basis with bright prospects before it.

Wholesale prices are f.o.b. Chicago: Large egg, $5.50; small egg, range and chestnut, $5.75; Lehigh lump, $7.

The retail prices fixed by the Chicago Coal Exchange are: Large egg $6.75, small egg, range and chestnut, $7.

The demand for bituminous continues light from all sources, and prices are none too firm. Quotations per ton of 2,000 pounds are: Erie, $4.25; Pittsburgh, $3.40; Indiana block, $2.50; Blossburg, $3.90; Greene and Sullivan county (Ind.) shaft, $2.25@$2.40; Jackson Hill, $3.50; Jackson shaft, $3.50; Hocking Valley, $3.20; Youghiogheny, $3.40.

The coke market is also unchanged. Furnaces are asking further reductions in prices, which will probably not be granted. If the increased consumption of iron predicted for this year is realized, all the Valley mills will have to start up and run to their full capacity regardless of the price of coke. Quotations are: Connellsville, 72 hours, $5.05; domestic, crushed, $4@$4.25; Elk Lick, 72 hour, $4.25@$4.50 per ton of 2,000 pounds f. o. b. Chicago.

Pittsburg. Jan. 22.

(From our Special Correspondent.)

Coal.—The situation along the Monongahela and Youghiogheny presents no change. The river mines are idle, and likely to remain so for some time. Both parties are firm; the miners demand 3½ for mining, and the mine owners refuse to make any advance. This is the present situation. Local trade is active, and prices are maintained

Quotations are: River, wholesale, 4½@5; railroad, 5@5½.

Connellsville Coke.—Trade at present is very unsatisfactory; the outlook not very favorable. Shipments show a material falling off. The new coke scale will come up for adjustment on the first of February. Several companies have notified their men that a number of ovens will be shut down indefinitely. The Frick Company alone has blown out 1,131 more ovens. By actual count over 6,000 ovens are now idle, with more to follow. Shipments fell off, last week, 1,450 cars; shipments of the week west of Pittsburgh were 2,096; east of Pittsburgh, 1,257; Pittsburgh and river points, 1,300; total, 4,653 cars; tons, 83,754.

Price of coke:

	New rates.		
Furnace	$1.90	Founders	2.30
Dealers	2.15	Crushed, dealers	2.50
		Crushed, consumers	2.65

Freights are unchanged to all points.

FREIGHTS.

From Philadelphia to: Boston, 1.00@1.15; Charleston, 1.10@1.30; Galveston, 2.25; New Bedford, .75.; Newburyport, .95; New Orleans, 2.25; Norfolk, .80; Providence, .75; Salem, 95; Washington, † .85.

† Alongside.

METAL MARKET.

NEW YORK, Friday Evening, Jan. 23.

Prices of silver per ounce troy.

Jan.	Sterling Exch'ge.	Lond'n Pence.	N. Y. Cts.	Jan.	Sterling Exch'ge.	Lond'n Pence.	N. Y. Cts.
17	4.86	48	1.05⅝	21	4.86	48	*
19	4.86	48⅜	1.05¾	22	4.86	47⅝	1 03¼
20	4.86	48¼	1.05½	23	4.86	47½	1.03

* 1.05–1.04.

Owing to completion of monthly purchases by the Government, and the growing feeling that further silver legislation at this session of Congress is very doubtful, there is again a sagging market. The impression that the President would veto a free coinage measure, even if it should pass the House, is growing and influences the market accordingly.

The United States Assay office at New York reports total receipts of silver for the week to be 143,000 ounces.

Silver Bullion Certificates.

NEW YORK STOCK EXCHANGE.

	Price. H.	Price. L.	Sales.
Jan. 17	106¼	105⅞	100,000
Jan. 19	106⅜	106	193,000
Jan. 20	106	105	172,000
Jan. 21	105¼	104	242,000
Jan. 22	104	103½	256,000
Jan. 23	104	103	455,000
Total sales			1,419,000

Domestic and Foreign Coin.

The following are the latest market quotations for American and other coin:

	Bid.	Asked
Trade dollars	$ .80	$ .82
Mexican dollars	.82	.83
Peruvian soles and Chilian pesos	.73	.75
English silver	4.80	4.84
Five francs	.94	.95
Victoria sovereigns	4.83	4.87
Twenty francs	3.83	3.88
Twenty marks	4.74	4.78
Spanish doubloons	15.55	15.70
Spanish 25 pesetas	4.80	4.85
Mexican doubloons	15.55	15.70
Mexican 20 pesos	19.50	19.60
Ten guilders	3.96	4.00
Bar silver	1.03¾	1.04¾

Foreign Bank Statements.

The governors of the Bank of England at their weekly meeting on Thursday lowered its minimum rate of discount from 4 to 3½%. In the week the bank lost £190,000 bullion, and the proportion of reserve to liabilities was reduced from 44·33% to 43·91%, against an advance from 35·29% to 39·91% in the corresponding week last year, when its discount rate was 6%. On the 22d inst. the bank lost £50,000 bullion on balance.

Copper.—The condition of the market has changed but little since our last report. There is still the same lifeless state of affairs prevailing, producers and consumers both pursuing a waiting policy. It has, however, been reported that some sales have been made on the basis of 15 cents, price to be guaranteed, but so far we have not been able to get this confirmed. Consumption has not as yet improved, and whether it will do so after the price has been definitely fixed is a question which is rather difficult to answer at the present time. It is certain, however, that should the price be reduced to 14c (a figure which is being generally expected), manufacturers will then buy more freely: and it is not unlikely that, if confidence on their part should be reestablished, it may also have the same effect on trade in general.

The London market has remained steady during the past week, and the variations which took place did not exceed 2s. 6d.@5s. The market opened on Monday at £53 2s. 6d.@£52 5s. spot, and $53 12s. 6d.@£53 15s. futures; and we close to day at £53 7s. 6d.@£53 10s. spot and £53 15s.@£53 17s. 6d. futures.

Rather large quantities of Anaconda matte have been prepared for sale at 10s. We quote: Tough copper at £56; best selected at £58 10s.@£59 10s.; strong sheets at £64@£65; India sheets at £59@£60; yellow metal sheets at 6¼s.

Regarding what we reported in our last issue as to the Rothschild's taking an interest in the Anaconda mine, it now transpires that this company has been coverted into a joint stock concern.

It seems quite evident that Messrs. Belmont are representing the interests of the Rothschilds, while on the other hand, it is understood that Messrs. Kuhn, Loeb & Co. are representing the English interests.

Messrs. James Lewis & Sons have just issued their annual report on copper for the year 1890. They state as follows: "The total production of the world for 1890 we estimate at 282,000 tons, against 265,000 in 1889, and 260,000 tons in 1888.

The value of copper during the coming year will mainly depend upon the extent of the supplies received from the United States. We see no reason why the consumption of copper during 1891 should be less than during 1890. In fact, it appears likely to prove greater with the constantly extending use of electricity for lighting, motive power, telephonic and telegraphic purposes, a probable increased consumption of sulphate of copper, and an improved demand from India, which took 2,600 tons less last year than in 1889. Assuming there is no increase in the consumption, and taking into account the lack of copper held on French account in smelters' works and elsewhere (not returned in the public stocks) at the commencement of 1890, and the transfer of the stock held in Japan to this country, it is evident that about 50,000 tons more copper will be required in England and France during 1891, unless present stocks are to be correspondingly diminished. Allowing for a reduction in the public stocks of 10,000 tons—to a level rather less than the average of the years 1886, 1887 and 1888, an increased import of 40,000 tons will be required.

The exports of copper during the past week were as follows:

To Liverpool—	Copper matte.	Lbs.	
By S. S. Douro	5,559 bags.	575,275	$40,000
By S. S. Chicago	10,550 bags.	1,129,898	80,000
By S. S. Britannic	2,938 bags.	337,329	25,000
By S. S. Runic	4,147 bags.	443,871	30,000
To Antwerp—	Copper.		
By S. S. Westernland	446 bars.	139,748	17,480
To Havre—			
By S. S. La Normandie	108 casks.	135,000	17,500
" "	739 bars.	221,920	28,850

Tin.—The market has been very quiet, both here and in London, and the variations which have taken place in price have been slight, and business during the week has been of a retail character, and importation orders have been very few indeed. Stocks on the spot are still plentiful; but as the supplies afloat for this country are very small, it is not unlikely that there will be a marked scarcity of this metal during the next month.

We quote to-day spot at $20.25, January at $20.25, February at $20.30 and March at $20.40.

The London market, after closing last week at £91, 5d.@£91 7s. 6d. spot and £91 17s 6d.@£92 futures, now closes at £91 10d.@£91 12s. 6d. and £91 17s. 6d.@£92.

Lead.—Has continued in its downward tendency, offerings having been rather heavy, and the desire to sell on the part of refiners being quite pronounced. Consumers on the other side have shown a great deal of reluctance to buy at the decline, and the market, therefore, closes at 4·30, at which price the last sale was reported. It is however, unlikely that we shall see much lower prices, as the position of this metal continues to be a sound one, and a reaction is likely to set in the moment buyers step into the market to supply their wants, and that seems not far distant.

The London market has declined 2s. 6d., and Spanish is now quoted at £12 15s., and English at £13.

St. Louis Lead Market.—Messrs. John Wahl & Co. telegraph us as follows: "This market has gradually declined during the past week, and the metal is down from 4·30c. to 4·10c., with only stray lots finding buyers. The market closes in an unhealthy condition, with 4·10c. asked, 4c. bid.

Spelter.—Is very dull and the price has come down to 5c., St. Louis, which is equal to 5·30c. New York. Some sales are even reported at 5¼c., and it is not improbable that lower values will be established unless consumption (which is very unsatisfactory at the present time) improves. This may be said of the galvanizing as well as the sheet zinc trade.

Antimony continues steady with an improved demand. We quote "L. X." at 17¾, Hallett's at 16¾ and Cookson's at 19½.

Quicksilver.—Market is very dull, nothing is doing, and no features worthy of comment are noticeable. We quote: $49@$50 for the home market, and £8 10s.@£8 12s. 6d. abroad.

IRON MARKET REVIEW.

NEW YORK, Friday Evening, Jan. 23.

The same unattractive features prevail in the iron market, this week as last. Reports from some inland cities indicate a slightly increased demand, and some dealers in New York report a few more inquiries and orders. There is not, however, the slightest tendency toward higher prices, and no reason for supposing that there will be any such movement within the immediate future. On the contrary, all things seem to point to the same condition of stagnation in the market which has now reigned for many weeks. The pressure of financial stringency has been greatly relieved, and both buyers and sellers are feeling more easy, and are quietly waiting for something to turn up. There seems to be considerable uneasiness in the trade, however, in regard to possible dangerous financial legislation by Congress again unsettling things, and a generally expressed wish that that body would adjourn, and allow things to establish themselves again upon a more settled basis.

American Pig Iron.—The market continues very dull, although consumption, of course, goes on as usual. The consumers purchase only in small lots, as needed and keep no stocks ahead. All buying is of this hand-to mouth character. Many buyers who have been holding off in hopes that prices would be cut still further have been coming into the market again, and some dealers report increased inquiries and somewhat more orders.

Prices remain unchanged. Of the furnaces that blew out at the time of the strike in Alabama and Tennessee, very few, apparently, have blown in again, and there continues to be the same number of idle furnaces in the Mahoning Valley. Notwithstanding the number of the idle works, and the consequent decrease in production, there has not been the slightest ripple in the market on account of it. The fact is plain that there has been overproduction and, as a consequence, prices are not likely to increase until consumption, great as it already is, more nearly approaches furnace capacity. In the meantime there will probably be a tendency to reduce cost of production by lower wages, lower coke, and lower freight rates. We quote, as last week: Northern iron, No. 1x, $17.50 @$18; No. 2x, $16.50@$17; Southern, No. 1x, $16.50@ $17.50, and No. 2x, $15.50@$16.50.

Scotch Pig Iron.—The market is very dull and shows no change from last week. The only imports have been a lot of 150 tons, all of which was sold before arrival. There still continues to be the same uncertainty in regard to securing Dalmellington, and Summerlee is still out of stock. We quote as follows: Dalmellington, $22.50@$23; Eglinton, $20.50@$21; Carnbroe, $21.

Spiegeleisen and Ferro-Manganese.—There is but very little business doing and all transactions are small. No one likes to sell far ahead at present prices and the sales are for nearby delivery. We quote nominally for 20% spiegeleisen, $29; 80% ferro-manganese, $65.

Steel Rails.—While the agreement that was effected between representatives of the various rolling mill companies in this city last week has not yet been ratified by the directors of the several companies, there is not much doubt but that they will succeed in their endeavors to get together. All companies are now asking from $29.50 to $30 for rails; although there are reports of transactions at somewhat lower figures, it is impossible to verify them. The Scranton works are reported to have sold 15,000 tons to a New England railway on cash terms, but the price is kept quiet.

Rail Fastenings.—Business is still very dull, and some mills are reported stacking up stock in their yards. The price of spikes has reached about the bottom limit during the past month, and they are now being held somewhat firmer. We quote: Spikes, 2·05@2·10c.; angle plates, 1·70@1·80c.: bolts and square nuts, 2·75c.; hexagonal nuts, 3·00c.; complete joint, iron and steel, according to weight.

Tubes and Pipes.—Business is very good and is improving steadily. We quote discounts on carload lots as follows: 47½% on butt, black; 40% on galvanized; 60% on lap, black; 47½% on lap, galvanized; boiler tubes: 50% on 1¾-inch and smaller; 50% for 2-inch and larger; casing, all sizes, 50%.

Structural Iron and Steel.—The market continues in practically the same condition as last week, with no changes of importance to note. We quote as last week: Universal plates, $2.20; bridge plates, $2.15; angles, $2.20; beams, $3.10.

Merchant Steel.—Business is good and shows further signs of improvement. Prices, however, remain unchanged, and we quote: Best English tool, 15c., net; American tool steel, 7½@10c.; special grades, 13@20c.; crucible machinery steel 5c.; crucible spring, 3¾c.; open-hearth machinery, 2·60c.; open-hearth spring, 2·60c.; tire steel, 2·60c.; toe calks, 2·60c.; flat file, 4½c.; mill file, 4½c.; taper file, 7c.; first quality sheet, 10c.; second quality sheet, 8c.

Old Rails.—There is no change in the market and there have been but small transactions only. The price remains nominal at $23 for tees, and $25 for doubles.

Wrought Iron Scrap.—The market is very quiet, and there are sales of nothing but small lots. We quote from $21@$22.

Cleveland. Jan 22.

(From our Special Correspondent.)

The iron ore trade remains in an inactive condition. There is no movement, either by the buyer or seller, and there seems no likelihood of a general opening of the market for two or three months. The shut down in the Mahoning and Shenango valleys has curtailed shipments from the docks very materially. Indeed, but very little ore is going forward to consumers at the present time.

Prices remain nominally the same as my last quotation.

Specular and Magnetic Ores.

Bessemer,	66@69%	$6.00
"	6%@64%	5.00@5 50
Non Bessemer	66@69%	5.00@5.50
" "	62@65%	4 50@5.00
" "	57@60%	3.75@4.25

Soft Hematites Dried at 212°.

Bessemer	62@65%	$4.75@5.25
"	58@61%	4.25@4.75
Non Bessemer	55@63%	3.50@4.25

Above prices are for deliveries on docks at Lake Erie ports.

Chicago. Jan. 21.

(From our Special Correspondent.)

The improved condition of the Chicago iron and steel market noted last week continues. Confidence is being gradually restored, and most of the industries are doing well, but low prices will most likely prevail. The closing down of so many furnaces of late in the Valleys and in the South has lessened the output of pig iron about 120,000 tons per month, which, if continued, will, of course, greatly affect stocks on hand, and add considerable strength to Northern irons. The bulk of business continues as yet to be in job lots picked up by large consumers for spot cash. Leading charcoal furnaces in the Lake Superior district seem to be holding off, as to sales, and agents of Southern furnaces are not pressing their product. The sales of coke iron compare very favorably in tonnage to those of last year at this time. Heavy consumers say that now is a good time to buy, as metal is cheaper than ever before known. The outlook points to a good buying movement for some time to come. With a probability of cheaper ore and fuel higher prices cannot be looked for, even with the restricted production.

Pig Iron.—We quote to-day for cash per ton of pounds 2,240 f. o. b. Chicago, for Nos. 1 and 2, Lake Superior charcoal No. 3, for car wheels, Nos. 4 and 5 for malleable, $18.50@$19; Lake Superior coke, Bessemer, $18.50; Lake Superior coke, Bay View No. 1, $16.50; No. 2, $16; No. 3, $15.50; Southern coke, No. 1, $16@$17; No. 2, $15.50@$16; No. 3, $14.75@$15.50; Southern charcoal, $19@$19.50; standard Southern car wheel, $22@$24.50; Ohio softeners, Hanging Rock, $18@$18.50; Jackson County, $18.25@ $18.50; Hanging Rock, cold blast, $26@$28; warm blast, $23@$25; No. 1 Scotch, according to brands, $26@$27; American Scotch, $18.50@$19; Bay View Scotch No. 1, $18; No. 2, $17; Chicago Scotch, No. 1, $17; No. 2, $16; Emma Scotch, $18.50@$19; black band, Hubbard Scotch, $18.25; Hazelton, $18.50; Soft Silvery, $18; Wellston, No. 1, $18 75; No. 2, $18.25; Hamilton, No. 1, $19.25@$19.75; Norton, No. 1, $17.50@$18; Zanesville, No. 1, $18.75@$19.25.

Structural Iron.—The business in sight for structural irons is large, and the prospect very encouraging. Prices are: For car lots f.o.b. Chicago, iron and steel angles, $2.35@$2.40; universal plates, $2.50; sheared plates, $2.50; tees, $2.80@$2.90; beams and channels, $3.20. Store prices are: Angles, $2.50@$2.60; tees, $2.90@ $3, and beams and channels, $3.50@$3.70, according to quantity.

Bar Iron.—Bar iron is in better demand, and some manufacturers have already bought quite heavily. Local and nearby mills contrive to quote $1.70@$1.75 half extras, and intimate that these prices might be shaded on favorable specifications. Agents for valley mills quote $1.65, but are shading this price on desirable orders. Store rates are $1.90@$2.10, according to quality, with extras added.

Black Sheet Iron.—There is some inquiry from manufacturing consumers, but actual business is light as yet; the prospects are good for a large demand later on. Mills quote $2.85@$2.90 for No. 27 common, f.o.b. mill. Jobbers quote $3.20 from store for No. 24, $3.30 for Nos. 25 and 26, and $3.35 for No. 27.

Galvanized Sheet Iron.—The demand from stores is well maintained and trade is remarkably good for this season. Discounts remain at 62½% on Juniata, and 62½% and 5% on charcoal from store. Jobbing lots are quoted according to quantity ordered.

Merchant Steel.—An improved demand is noted for soft steels, both from consumers and dealers. For tool steel the demand is light, particularly so from railroads. We quote as follows: Tool steel, $7.75@$8; specials, $12@$25; open-hearth machinery, $3; Bessemer machinery, $2.50@$2.70; open-hearth spring steel, $2.75@$2.80; tire, $2.50@ $2.60; toe calk, $2.70@$2.80; sleigh shoe, $2.40@ $2.50; cutter shoe (T. & B.), $2.65@$2.70; crucible sheet steel, $7@$10; crucible spring, $3.75.

Nails.—Manufacturers of both steel cut and wire nails report numerous orders from outside dealers; jobbers are doing a fair trade, but are not urging sales at present prices. There is more inquiry for wire nails, but prices are weak at $2.05@ $2.10, and cut at $1.70 in quantities.

Plates, Tubes, etc.—There is more inquiry for small lots of plates, tank iron and steel from store, and prices are fair and steady. On mill lots prices are easier for cash buyers. Future prospects are regarded as good. Quotations are: Tank iron, $2.70; tank steel, $2.90; heavy sheets from 10 to 14, $2.90@$3; steel sheets 10 to 14, $3.25@$3.50; shell iron, $3@$3.25; flange iron, $4@$4.25; flange steel, $3.50; shell steel, $3.25; boiler rivets, $4@ $4.25; firebox iron and steel, $4.75@$5.50; boiler tubes, 4½ inches and larger, 52½%; 2 to 4 inches, 50%, and 1¾ inches and smaller, 45%.

Steel Rails.—Inquiries are reported more numerous for steel rails, and the situation is not altogether so unfavorable as it looked a week ago. Local mills are expecting some desirable orders to be placed very soon as the outcome of the present negotiations. Regular quotations are $30@$31.50 f.o.b. Chicago, according to delivery. For February or March these figures would undoubtedly be shaded.

Railway Track Supplies.—Demand continues limited almost to absolute requirements, and prices are easier. We quote: Iron fish plates, $1.95@$2; steel fish plates, $2.15@$2.25; bolts, square nuts, $3; hexagon nuts, $3.08@$3.10; spikes, $2.15@$2.20.

Scrap Iron.—There is a fair demand for small lots and the market is in better shape than for some time past. A better business is looked for during the next thirty days. Prices are steadier.

We quote as follows: Country mixed scrap, $15.50@$16.50, according to condition; No. 1 mill, $14@$14.50; light wrought, $9@$9.50; horseshoes, $19@$19.50; axles, $25; cast machinery, $12; stove plates, $9.50@$10; borings, $8@$8.50; wrought turnings, $11.50; No. 1 railroad shop or forge, $20; track scrap, $19.

Old Wheels and Rails.—Everything under this head remains very quiet. A large sale of old iron rails is reported at $22.80; a fair quotation would be $22.75@$23. Old steel rails are quoted at $14.50 for short and $18.50 for long lengths, suitable for rerailing. Old wheels are now worth about $17@$17.50.

Louisville. Jan. 17.

(Special Report by Hall Bros. & Co.)

There is nothing of special importance to be said in reviewing the iron market for the past week. No new developments worthy of special note have transpired. There are some inquiries and sales for medium sized lots. Low-priced warrant iron still predominates, and there are several large lots of this kind of iron on the market, on which liberal reductions in price are offered to effect sales.

Hot Blast Foundry Irons.—Southern coke, No. 1, $14.25@$14.50; No. 2, $13.75@$14; No. 3, $13.25@ $13.50. Southern charcoal, No. 1, $16.50@$17; No. 2, $16@$16.50. Missouri charcoal, No 1, $17.50 @$18; No. 2, $17@$17.50.

Forge Irons.—Neutral coke, $12.50@$13; cold short, $12.50@$13; mottled, $12@$12.25.

Car Wheel and Malleable Irons.—Southern, standard brands, $21@$22; other brands, $17.50 @$18. Lake Superior, $21.50@$22.50.

Philadelphia. Jan. 22.

(From our Special Correspondent.)

If any attempt were made to crowd pig iron on the market it would result in lower prices. Large purchases have been quietly made by way of extending or renewing expiring contracts. Furnace men say there is but little inquiry this week, buyers taking it for granted that prices have reached bottom. There are several brands of No. 1 Foundry that cannot be had under $18, though sales of inferior brands are taking place daily at $17. Good sales of No. 2 were made this week at $16.50. Forge iron can be had at $14.50, though some companies refuse to book orders under $15. There is very little interest felt in the market.

Muck Bars.—Large buyers express the belief that they will secure all the bars they want at $26.50 before the close of the month.

Steel Billets.—The lowest selling price heard of this week was $28; highest asking price, $29. Buyers have covered requirements pretty well for the present.

Merchant Iron.—Bars have declined to $1.70@ $1.75, and buyers claim that no more is being asked at interior mills for first-class iron. Things look unfavorable for good prices. Sharp cutting is likely to occur, especially on large lots of medium which are now being inquired for.

Nails.—A better movement in nails is reported at $1.80.

Skelp.—Quotations are $1.80@$1.85 for grooved but buyers are suspicious that these are not the lowest figures possible.

Wrought Iron Pipe.—Discounts on butt welded, black, 47½%; galvanized, 40%; lap welded, black, 60%; galvanized, 47½%. Orders are quite plenty.

Sheet Iron.—The movement in sheet iron from stores is moderate and prices are firm, but special inducements were held out to large buyers at mill.

Plate and Tank.—Ship and tank iron is still quoted at 2c. and steel at 2·15c. The mills are picking up new business slowly.

Structural Iron.—Quotations, except on very large requirements, remain where they were. A few small orders were booked. There is nothing of special interest to report.

Steel Rails.—Only small lots are ordered. Prices are given at $30. Large buyers are doing nothing, but say that when they are ready to place orders they will obtain much better terms. They do not believe any arrangement that can be made can keep rails at $30.

Old Rails.—Quoted at $24 at tide water.

Scrap.—Several yard men have sold out all they had and all they are able to deliver for two or three months, hence prices have moved up a little, especially for L. R. and No. 1, both of which are quoted to-day as high as $23.

Pittsburg. Jan. 22.

(From our Special Correspondent.)

Raw Iron and Steel.—During the past week there has been the dullest trade experienced for a long time. Indications point unmistakably to an early improvement, however, and better prices in the very near future. While the stock of iron in first hands is not large, dealers experienced no difficulty in obtaining all they require, provided they make the figures satisfactory. Sales reported are small and exhibit a wide range of prices. As usual, city-furnace made iron commands the best prices, and certain makers have held their iron out of the market, not being disposed to accept present rates. Bessemer pig and grey forge have sold at remarkably low prices. Still, the dullness noted appears to be passing away, and the tendency toward lower prices is no longer regarded with any degree of apprehension; in fact, the outlook, generally, is much better.

Most of the valley furnaces are still "banked" and will likely remain in that condition until they have come to a proper understanding with the railroads and ore producers. Last year ore purchases were made in November; so far this year buyers have held off waiting for owners to accept lower prices. The coke question may be considered about settled; upon good authority it is stated that there will be no further reduction.

The iron output has been greatly reduced within the past six weeks, although accumulations at furnaces during the same period have been very considerable, so that for the present one about offsets the other.

It is now pretty evident that consumers are about convinced that delays may be costly and that there is nothing to be gained by waiting for lower prices. Parties who have been formerly shading asking prices are doing so no longer. There is a disposition to adjust the supply to the demand so that whatever else may happen it is hardly possible to see prices lower than they have been since the first of the year.

An Eastern iron man says that "Large buyers are making inquiry for prices, and it is probable that the volume of business will show a steady increase from this time forward, but prices on large orders are not as firm as they ought to be." The following sales furnish the necessary information:

Coke Smelted Lake and Native Ores.

2,000 Tons Bessemer, Jan., Feb.	$16.30 cash.
1,000 Tons Bessemer, Feb., March	16.00 cash.
1,000 Tons Grey Forge	14.00 cash.
1,000 Tons Grey Forge	14.25 cash.
750 Tons Grey Forge	14.30 cash.
500 Tons Grey Forge at City Furnace	14.50 cash.
500 Tons Grey Forge, all ore	15.50 cash.
500 Tons Grey Forge, Feb., March	14.50 cash.
200 Tons Grey Forge, prompt delivery	14.75 cash.
150 Tons No. 1 Foundry, all ore	17.25 cash.
150 Tons No. 2 Foundry, all ore	16.75 cash.
100 Tons No. 2 Foundry, all ore	16.50 cash.
100 Tons No. 2 Silvery	16.50 cash.
300 Tons Grey Forge at Valley Furnace	14.00 cash.
100 Tons Cold Short Foundry	15.25 cash.

Charcoal.

100 Tons No. 2 Foundry	22.50 cash.
100 Tons Warm Blast	24.00 cash.
50 Tons No. 2 Foundry	22.00 cash.
50 Tons Warm Blast	24.00 cash.

Steel Slabs and Billets.

2,500 Tons Billets and slabs	25.25 cash.
1,500 Tons Steel Slabs and Billets	25.75 cash.
750 Tons Steel Slabs and Billets	25 25 cash.

Muck Bar.

700 Tons Neutral, Feb., March	27.00 cash.
500 Tons Neutral	27 75 cash.
500 Tons Neutral	27.50 cash.
200 Tons Neutral	28.00 cash.
200 Tons Neutral	27.00 cash.

Steel Wire Rods.

400 Tons American fives, Feb., March	37.00 cash.

Ferro-Manganese.

200 Tons 80%, Feb., March, Pittsburg.	63.00 cash.

Steel Bloom Ends.

300 Tons Bloom Ends	17.00 cash.

Skelp Iron.

200 Tons Sheared Iron	2.00 4 m.
180 Tons Narrow Grooved	1.87½ 4 m.
150 Tons Wide Grooved	1.90 4 m.

Old Iron Rails.

1,000 Tons American T's	24.50 cash.

Scrap Material.

150 Tons Wrought Iron Turnings, net	15.00 cash.
100 Tons Cast Borings, gross	12,00 cash.
100 Tons Steel Scrap, gross	18.00 cash.
100 Tons No. 1 Wrought Scrap, net	20.00 cash.

CHEMICALS AND MINERALS.

NEW YORK, Friday Evening, Jan. 23.

Business during the past week has offered no features worthy of special comment. A fair demand accompanied by sales has caused prices to become a little firmer and in some cases even a slight advance is noticeable. Dealers speak generally of fair trade. No large arrivals to be put on the market have been noted, but under contract they are quite large. The supply in some lines is so small that the demand commences to make it self felt, and a further rise is looked forward to by dealers. High test alkali has arrived freely and in some instances has been allowed to remain on dock at request of buyers who are not yet ready to handle it. In the general tenor of the market better business and advancing prices are noted.

Caustic soda, 60%.—Most arrivals during the week have been on contract; a fair demand is reported, and some business has been done for January, February and fall shipments; prices remain about as quoted in our last; the general feeling among sellers is confident and values are firm at 3·35@3 37½c., 70 to 74%. The arrivals are said to have been not more than 700 drums, and the largest parts of this was on contract. Buyers have requested that delivery be postponed, so that quantities are at present on the docks which could be delivered at once if desirable. Some time since sales of this article were reported at as low as 3·00c. and 3·05c., but dealers maintain that nothing can be brought out for less than 3·10c.@32½c. Lower quotations are due to local causes but the outlook points toward the maintenance of those as given. Increased inquiry is noticeable, not always resulting in sales but still a healthy tone pervades the market and more has been done than heretofore. 77%: The stock remains slight with no arrivals and no business of any consequence reported; prices, 3·10@ 3·12½c.

Carbonated soda ash, 48%.—We are led to believe that the available stock is very small, some reports indicating that the market is almost bare. As the demand has not fallen but continues steady, values have become firmer and some dealers look forward confidently to a decided rise in sellers' demands, one gentleman, who is thoroughly acquainted with this trade, even ventures the prediction that in the course of several weeks it would be selling at 1·75c. Considerable business is being done for forward shipment, particularly with 48%. Prices are 1·57½c.@1·60c., for large lots 1·70c., in a jobbing way. 58%: Not much business is reported; prices remain about as quoted. Some dealing has been done in futures. Values, 1·55c.@1·57½c.

Caustic soda ash, 48%.—No new feature has made itself felt in this line. Inquiry is very slight and business is dull. Prices are quoted at 1·50@ 1·52½c.

Sal soda.—The supply in the East seems to have been nearly exhausted. Some shipments from here to Boston are reported at prices far above those formerly quoted, in some cases as high as 1·25c. being obtained. A large jobbing trade is being done at prices from 1·12½@1·17½c. The demand continues fair. Arrivals are reported daily, and business generally may be said to have been good.

Bleaching Powder.—No business of any consequence is being done in this article. A fair stock, with very little demand, is reported to us. Prices are a little lower than heretofore quoted, 1·67½@ 1·72½c.

Acids.—The unsettled feeling as to the outlook in this line continues. There seems to be a grand uncertainty about the market; namely, that with proper manipulation it would be hard to say at what prices acids could not be bought. Some dealers who talk high prices with confidence say values have become firmer, and report sales at prices much above those quoted in our last issue. That these gentlemen are not buying at prices below their own is not to be wondered at, but the wide difference in quotations is just another evidence of the instability of the market. Business this month as compared with that of similar periods during preceding years is said to be good; a fair demand and large continued contracts are reported.

We quote acids per hundred pounds in New York and vicinity: Acetic, $1.65@$2.20; muratic, 18°, 80c. @$1; muriatic 20°, 90c.@$1.10; muriatic, 22°, $1@ $1.20; nitric, 40°, some sales have been reported at $3.25@$3.50, and acid can certainly be had at those figures, but some dealers report nothing at all below $3.75, little selling below $4 and most as high as $4.25, or thereabouts. Nitric 42°, $3.50@ $4; sulphuric, 60°, 70c.@80c.; sulphuric, 66°, 75c.@ 90c. According to other reports, most 66° has been getting as high as $1.12½, and not a little $1.25.

Fertilizing Chemicals.—This market continues firm as stated in our report of last week. The demand remains small although slightly increased. Dealers look forward to good business as soon as the year shall have advanced further, and reports from the south indicate an increasing demand for both general and special grade fertilizers. Freights have gone off a little, so that values delivered vary, but f. o. b. vessel for the various kinds of phosphate rock remain the same. Dried Charleston rock, $7@$7.50; Charleston rock ground, $8@$11.50.

A fair demand for sulphate of ammonia is reported; arrivals continue and prices for gas liquor are rather low, bone being quoted almost the same. Some contracts for shipment from abroad, with terms a little more favorable to buyers, are reported. The market is firm at 3·12½@3·15c.

Muriate of Potash.—Inquiry for future shipments continues as already noted. The arrivals during the last week aggregate about 400 tons. Most of this has gone into consumption. Business gives promise of continuing good. Not much is reported on the way, and the available stock is small. Prices remain as already given until warmer weather at the mouth of the Elbe will allow of shipments by vessel. Quotations for 50-ton lots and over per hundred pounds are $1.82½ for New York, $1.85 for Philadelphia, $1.87½ for Southern Ports, and $1.90 for Gulf ports.

The selling syndicate of the protoxide of potassium works in Stassfurt report that for the year 1891 2,863,000 ctrs. of chloride of potash were sold as compared to 2,563,000 ctrs. in the year 1890, making an increase of 300,000 ctrs.

Nitrate of Soda.—The condition of this market is probably attracting more attention than that of any other fertilizer. Reports of trouble in Chili and Peru came to hand as long as two weeks ago, and values have slowly been increasing. In our last issue we mentioned the impending blockade of Iquique, and telegrams received here since have confirmed our report. The ports of Iquique, Pisagua and Laleta-Buena are all closed, and until some further developments no nitrate will leave them. Among the trade here it is generally believed that the international interests affected by this blockade are altogether too large to allow of its continuing any length of time. In England, France, and here, such large quantities of this mineral are used that dealers think it probable that as soon as the markets feel the lack of it some steps will be taken to terminate the blockade. The stock here continues fairly large, although some large sales have marked the business of the week. Very little is to be had for $1.80. Sales have been made at $1.85, and some as high as $2.

Brimstone.—Some arrivals of Brimstone have been reported, but the market remains practically as given in our last issue. February and March shipments are held at $25.75 to $26.00 for best unmixed seconds. Spot and nearby a little higher; best unmixed thirds rule from 50c.@75c. lower.

Liverpool. Jan. 14.

(Special correspondence by J. P. Brunner & Co.)

There are a fair number of orders in the market for heavy chemicals, although business cannot be called absolutely brisk. Makers are mostly well supplied with orders for this month, and as resellers appear to be cleared out, Alkali Company's prices have to be paid.

Soda Ash is in small compass for this month and although 1 5-16d. for 48% caustic ash, and 1 3 8d. for high test caustic and carbonated, are minimum quotations, higher prices have been paid in some cases for prompt delivery.

Soda Crystals in request at £3 10s. per ton, and not easy to find any sellers for prompt delivery.

Caustic Soda is not active, but a fair number of orders are in the market at union prices. Minimum quotations are as follows:

	60%.	70%.	74%.	76%.
Prompt or January, March.	£10	£11 5s.	£12 5s.	£13 5s.
January, June or all 1891.	£9 15s.	£11	£12	£13

Bleaching Powder.—Makers have little to sell, and £7 is minimum quotation. At the moment there are no resale parcels of hardwood offering.

Chlorate of potash is meeting with some inquiry, and 5½d. lowest price for prompt delivery, while 5½d.@6d. per pound is asked for all 1891 delivery.

Bicarb Soda held for £7 per ton and upward for 1-cwt. kegs, according to brand and quantity, with usual allowance for larger packages.

Sulphate of Ammonia.—Since our last prices have eased off still further, but have recovered again, and with a better inquiry the market closes firm at £10 16s. 3d.@£10 17s. 6d. per ton for good grey, 24% in double bags f.o.b. here, and tendency is to higher values.

BUILDING MATERIAL MARKET.

NEW YORK, Friday Evening, Jan. 23.

The market continues in almost a nominal position. No business of any magnitude is reported, and dealers may be said to be living on hope. The arrivals continue slight and demand shows no signs of increasing.

Bricks.—There are no North River bricks in the market. The demand in small lots is fair. Some Staten Island and Long Island brick is coming in, and goes slowly into consumption. Jersey is reported as arriving in just sufficient quantities to supply demand.

We quote, Long Island, $6.50@$7 per M.; Pale, $3.25@$3.50; Jerseys, $5@$5.50.

Lime.—The available supply continues small with demand in proportion. No sales of any consequence are reported and figures remain almost nominal. Rockland, common and finishing, 90c.@ $1 10; St. John, common and finishing, 85c@90c.; Glens Falls, common and finishing, 90c.@$1.10.

DIVIDEND-PAYING MINES.

	Name and Location of Company.	Capital Stock.	Shares. No.	Shares. Par	Assessments. Total levied.	Assessments. Date and Amount of last			Dividends. Total paid.	Dividends. Date & amount of last.		
1	Adams, s. L.	Colo.	$1,500,000	150,000	$10	*	.....	-	.....	$555,000	Jan.	1887 .10
2	Alice, s. C.	Mont.	10,000,000	400,000	25	*	.....	.....	.....	895,000	Dec.	1890 .05
3	Alma&Nel Wood C.,g	Idaho	300,000	30,000	10	*	.....	.....	.....	60,000	Jan.	1889 .50
4	American & Nettie,c.	Colo.	.....	300,000	.....	.....	.....	.....	.....	150,000	Nov.	1889 .10
5	Amy & Silversmith,s.	Mont.	.....	341,419	.....	.....	.....	.....	.....	247,330	Aug.	1887 .12½
6	Atlantic, c.	Mich.	1,000,000	40,000	25	$280,000	April	1875	$1.00	660,000	Aug.	1890 1.00
7	Argenta, s.	Nev.	10,000,000	100,000	100	335,000	July.	1889	.10	40,000	Feb.	1890 .20
8	Aspen Mg. & S., s. L.	Colo.	2,000,000	200,000	10	*	.....	.....	.....	560,000	Dec.	1890 .10
9	Aurora, I.	Mich.	2,000,000	100,000	20	.....	.....	.....	.....	155,000	Oct.	1887 1.87½
10	Badger, s.	Ont.	250,000	50,000	5	.....	.....	.....	.....	37,500	Mar	1890 .25
11	Bassick, G. s.	Colo.	10,000,000	100,000	100	*	.....	.....	.....	400,000	Mar	1884 1.00
12	Belle Isle, s.	Nev.	10,000,000	100,000	100	190,000	Dec.	1889	.15	300,000	Dec	1879 .25
13	Belcher, G. s.	Nev.	10,400,000	104,000	100	2,978,000	June	1890	.50	15,397,000	April	1876 1.00
14	Bellevue, Idaho, s. L.	Idaho	1,250,000	125,000	10	120,000	Dec.	1889	.25	200,000	Jan.	1890 .10
15	Bi-Metallic, s.	Mont.	5,000,000	200,000	25	.....	.....	.....	.....	410,000	Jan.	1891 .35
16	Bodie Con., G. s.	Cal.	10,000,000	100,000	100	580,000	June	1890	.25	1,602,572	April	1885 .50
17	Boston & Mont., G.	Mont.	2,500,000	100,000	25	*	.....	.....	.....	520,000	June	1886 1.50
18	Boston & Mont., C. &	Mont.	2,500,000	100,000	25	*	.....	.....	.....	1,575,000	Nov.	1890 1.50
19	Breece, s.	Colo.	5,000,000	200,000	25	.....	.....	.....	.....	2,000	Feb.	1880 .01
20	Brooklyn Lead, L. s.	Utah	500,000	50,000	10	.....	.....	.....	.....	127,000	July	1887 .05
21	Bulwer, G.	Cal.	10,000,000	100,000	10	130,000	Aug.	1889	.25	175,000	Jan.	1884 .10
22	Bunker Hill & Sull.	Idaho	3,000,000	300,000	10	*	.....	.....	.....	150,000	Oct.	1883 .06½
23	Caledonia, G.	Dak.	10,000,000	100,000	100	505,000	May	1885	.15	194,000	Oct.	1890 .08
24	Calliope, s.	Colo.	1,000,000	1,000,000	.....	.....	.....	.....	.....	135,000	Dec.	1890 .00½
25	Calumet & Hecla, C.	Mich.	2,500,000	100,000	25	1,200,000	.....	.....	.....	34,350,000	May	1890 5.00
26	Carbonate Hill, s. L.	Colo.	1,500,000	200,000	10	*	.....	.....	.....	80,000	April	1884 .05
27	Carlisle, G.	N. M.	1,000,000	200,000	5	.....	.....	.....	.....	175,000	Dec.	1888 .12½
28	Castle Creek, G.	Idaho	100,000	100,000	1	*	.....	.....	.....	51,000	Oct.	1883 .03
29	Catalpa, s. L.	Colo.	3,000,000	300,000	10	*	.....	.....	.....	270,000	May.	1884 .10
30	Central, C.	Mich.	500,000	20,000	25	100,000	Oct.	1861	.65	1,200,000	Feb.	1890 1.00
31	Chrysolite, s. L.	Colo.	10,000,000	200,000	50	*	.....	.....	.....	1,650,000	Dec.	1884 .25
32	Colorado Central, s. L.	Colo.	2,750,000	275,000	10	*	.....	.....	.....	406,250	Aug.	1889 .05
33	Commonwealth, s.	Nev.	10,000,000	100,000	100	170,000	Nov.	1888	.50	20,000	Nov.	1890 .20
34	Confidence, s. L.	Nev.	.....	24,960	..	325,880	May	1890	.75	199,680	April	1889 1.00
35	Cons. Cal. & Va., G. s.	Nev.	21,600,000	216,000	100	108,000	Jan.	1885	.20	3,466,800	April	1890 .25
36	Contention, s.	Ariz.	12,500,000	250,000	50	.....	.....	.....	.....	12,587,500	Dec.	1884 .25
37	**Cop. Queen Con., C.	Ariz.	1,400,000	140,000	10	.....	.....	.....	.....	210,000	Feb.	1889 1.50
38	Crescent, s. L. G.	Utah	15,000,000	600,000	25	*	.....	.....	.....	228,000	Oct.	1888 .03
39	Crown Point, G. s.	Nev.	10,000,000	100,000	100	2,425,000	Sept.	1889	.50	11,588,000	Jan.	1875 2.00
40	Daly, s. L.	Utah	3,000,000	150,000	20	.....	.....	.....	.....	1,800,000	Jan.	1891 .25
41	Deer Creek, s. G.	Idaho	1,000,000	200,000	5	*	.....	.....	.....	20,000	June	1889 .05
42	Deadwood-Terra, G.	Dak.	5,000,000	200,000	25	*	.....	.....	.....	†1,000,000	Nov.	1887 .10
43	Derbec B. Grav., G. s.	Cal.	10,000,000	100,000	100	90,000	Dec.	1881	.10	240,000	Oct.	1890 .10
44	Dunkin, s. L.	Colo.	5,000,000	200,000	25	*	.....	.....	.....	390,000	Oct.	1889 .05
45	Dunstone, G. s. L.	Mont.	1,000,000	200,000	5	*	.....	.....	.....	6,000	Nov.	1888 .03
46	Eclipse	Colo.	100,000	100,000	1	.....	.....	.....	.....	20,000	Nov.	1887 .10
47	Elkhorn, G. s.	Mont.	1,000,000	200,000	5	*	.....	.....	.....	196,875	Dec.	1890 .50
48	Empire Lt., G.	Mont.	500,000	100,000	5	*	.....	.....	.....	70,500	Oct.	1887 .37½
49	Eureka Con., G. s. L.	Nev.	5,000,000	50,000	100	550,000	June	1889	.50	4,892,500	Oct.	1890 .25
50	Evening Star, s. L.	Colo.	500,000	50,000	10	*	.....	.....	.....	1,458,000	Dec.	1889 .25
51	Excelsior, G.	Cal.	10,000,000	100,000	100	560,000	Sept.	1885	1.00	875,000	Oct.	1890 .25
52	Father de Smet, G.	Dak.	10,000,000	100,000	100	200,000	Nov.	1878	1.00	1,125,000	Dec.	1885 .20
53	Franklin, C.	Mich.	1,000,000	40,000	25	220,000	June	1871	.....	960,000	Jan.	1889 2.00
54	Freeland, G. s. C.	Colo.	5,000,000	200,000	25	*	.....	.....	.....	190,000	July.	1886 .10
55	Garfield Lt., G. s.	Nev.	500,000	100,000	5	.....	.....	.....	.....	95,000	April	1888 .12½
56	Gould & Curry, G. s.	Nev.	10,800,000	108,000	100	3,988,800	Sept.	1890	.25	2,826,000	Oct.	1870 10.00
57	Grand Prize, s.	Nev.	10,000,000	100,000	100	785,000	Jan.	1890	.30	525,000	Jan.	1890 .30
58	Granite, s. L.	Idaho	500,000	500,000	1	*	.....	.....	.....	28,400	Oct.	1889 .02
59	Granite Mountain, s.	Mont.	10,000,000	400,000	25	.....	.....	.....	.....	10,400,000	Jan.	1891 .50
60	Green Mountain, G.	Cal.	1,250,000	125,000	10	*	.....	.....	.....	212,000	Nov.	1881 .07½
61	Hale & Norcross, G. s.	Nev.	11,200,000	112,000	100	5,142,800	April	1890	.50	1,162,000	July	1888 .50
62	Hecla Con., s. G. L. C.	Mont.	1,500,000	30,000	50	.....	.....	.....	.....	1,500,000	April	1889 .50
63	Hel's Mg. & Red, G. s. L.	Mont.	3,315,000	663,000	5	*	.....	.....	.....	197,979	July.	1886 .06
64	Holmes, s.	Nev.	10,000,000	100,000	100	370,000	May.	1890	.25	75,000	April	1886 .25
65	Holyoke, G.	Idaho	200,000	200,000	1	.....	.....	.....	.....	27,000	Feb.	1883 .10
66	Homestake, G.	Dak.	12,500,000	125,000	100	200,000	July.	1878	1.00	4,643,750	Jan.	1891 .10
67	Honorine, s. L.	Utah	500,000	250,000	2	37,500	April	1889	.05	125,000	Sept.	1887 .05
68	Hope, s.	Mont.	1,000,000	100,000	10	*	.....	.....	.....	233,252	April	1888 .25
69	Horn-Silver, s. L.	Utah	10,000,000	400,000	25	*	.....	.....	.....	4,200,000	Sept.	1890 .12½
70	Hubert, G.	Colo.	1,000,000	1,000,000	1	*	.....	.....	.....	247,000	Dec.	1889 .00½
71	Idaho, G.	Cal.	310,000	3,100	100	.....	.....	.....	.....	5,235,900	Dec.	1889 5.00
72	Ideal, s. L.	Colo.	1,500,000	50,000	10	.....	.....	.....	.....	15,000	Oct.	1886 .05
73	Illinois, s.	N. M.	100,000	100,000	1	*	.....	.....	.....	45,000	April	1890 .20
74	Independence, s.	Nev.	10,000,000	100,000	100	340,000	Oct.	1886	.20	225,000	Sept.	1879 .25
75	Iron Hill, s.	Dak.	2,500,000	250,000	10	134,000	July	1889	.03	156,250	Nov.	1887 .07½
76	Iron-Silver, C.	Colo.	10,000,000	500,000	20	*	.....	.....	.....	2,500,000	April	1889 .20
77	Jackson, G. s.	Nev.	5,000,000	50,000	100	237,500	Nov.	1880	.20	55,000	June	1889 .10
78	Jay Gould.	Mont.	2,000,000	40,000	5	*	.....	.....	.....	459,000	May	1890 .04
79	Jocuistita, L.	Mex.	2,500,000	250,000	10	.....	.....	.....	.....	1,200,000	Feb.	1885 .50
80	Jumbo, G.	Colo.	2,000,000	200,000	10	.....	.....	.....	.....	35,000	Oct.	1887 .02½
81	Kearsarge, C.	Mich.	1,250,000	50,000	25	190,000	Oct.	1887	1.00	100,000	Jan.	1890 2.00
82	Kentuck.	Nev.	3,000,000	30,000	100	406,930	Aug.	1890	.30	1,350,000	Dec.	1890 .10
83	La Platta, s. L.	Colo.	2,000,000	200,000	10	*	.....	.....	.....	610,000	Sept.	1882 .30
84	Leadville Con., s. L.	Colo.	4,000,000	400,000	10	*	.....	.....	.....	4,423,000	April	1889 .05
85	Lexington, G. s.	Mont.	4,000,000	40,000	100	*	.....	.....	.....	609,000	Jan.	1885 2.00
86	Little Chief, s. L.	Colo.	10,000,000	200,000	50	*	.....	.....	.....	820,000	Dec.	1890 .05
87	Little Pittsburg, s. L.	Colo.	20,000,000	200,000	100	*	.....	.....	.....	1,050,000	Mar	1890 .50
88	Little Rule	Colo.	500,000	500,000	1	.....	.....	.....	.....	100,000	Dec.	1890 .02
89	Mammoth.	Utah	10,000,000	400,000	25	113,000	.....	1882	.25	760,000	Jan.	1890 .10
90	Martin White, s.	Nev.	10,000,000	100,000	100	1,225,000	Oct.	1890	.25	140,000	Dec.	1886 .25
91	Mary Murphy, G. s.	Colo.	350,000	3,500	100	*	.....	.....	.....	175,000	May	1888 5.00
92	Matchless, s.	Colo.	500,000	500,000	1	*	.....	.....	.....	15,000	Feb.	1890 .00½
93	May Mazeppa.	Colo.	1,000,000	100,000	1	.....	.....	.....	.....	70,000	Dec.	1890 .01
94	Minnesotta, C.	Mich.	1,000,000	40,000	25	420,000	April	1886	1.00	1,320,000	Mar	1876 .....
95	Mono, G.	Cal.	5,000,000	50,000	100	760,000	Sept.	1890	.25	12,500	Mar	1886 .25
96	Montana, Lt., G. s.	Mont.	3,300,000	660,000	5	*	.....	.....	.....	2,489,675	Oct.	1890 .06
97	Morning Star, s. L.	Colo.	1,000,000	100,000	10	*	.....	.....	.....	850,000	Dec.	1889 .20
98	Moulton, s. G.	Mont.	2,000,000	400,000	5	*	.....	.....	.....	380,000	Dec.	1887 .07½
99	Mount Pleasant, G.	Cal.	150,000	150,000	1	*	.....	.....	.....	150,000	Feb.	1887 .30
100	Mt. Diablo, s.	Nev.	5,000,000	50,000	100	137,500	June	1880	2.00	160,000	Oct.	1889 .20
101	Napa, Q.	Cal.	700,000	140,000	5	*	.....	.....	.....	100,000	Jan.	1891 .10
102	Navajo, G. s.	Nev.	10,000,000	100,000	100	500,000	April	1890	.15	365,000	April	1889 .10
103	New Guston, s.	Colo.	500,000	100,000	5	.....	.....	.....	.....	337,500	April	1890 .50
104	N. Hoover Hill, G. s.	N. C.	300,000	120,000	2½	*	.....	.....	.....	30,000	Dec.	1885 .06½
105	Northern Belle, s.	Nev.	5,000,000	50,000	100	425,000	Jan.	1884	8.00	2,400,000	April	1883 .50
106	North Belle Isle, s.	Nev.	10,000,000	100,000	100	395,000	April	1890	.20	230,000	May	1888 .50
107	North Star, G.	Cal.	1,000,000	100,000	10	.....	.....	.....	.....	250,000	Dec.	1889 .50
108	Ontario, s. L.	Utah	15,000,000	150,000	100	.....	.....	.....	.....	11,600,000	Jan.	1891 .50
109	Ophir, G. s.	Nev.	10,000,000	100,000	100	4,210,640	April	1890	.50	1,595,800	July	1892 1.00
110	Original, s. C.	Mont.	1,500,000	60,000	25	*	.....	.....	.....	123,000	July.	1888 .05
111	Oro	Colo.	500,000	100,000	5	.....	.....	.....	.....	60,000	June	1890 .20
112	Osceola, C.	Mich.	1,250,000	50,000	25	480,000	April	1876	1.60	1,447,500	Dec.	1890 1.50
113	Oxford, G.	N. S.	125,000	125,000	1	*	.....	.....	.....	78,500	Sept.	1888 .02
114	Paradise Valley, s. S.	Nev.	10,000,000	100,000	100	57,000	April	1888	.15	130,000	April	1887 .10
115	Parrot, C.	Mont.	1,800,000	180,000	10	.....	.....	.....	.....	696,000	Sept.	1890 .10
116	Peacock, s. G. C.	N. M.	2,000,000	200,000	10	*	.....	.....	.....	60,000	Nov	1886 .....
117	Plumas Eureka, G.	Cal.	1,406,250	140,625	10	.....	.....	.....	.....	2,548,046	Oct.	1889 .37½
118	Plutus, G. s. C. L.	Colo.	2,000,000	200,000	10	*	.....	.....	.....	20,000	Feb.	1886 .10
119	Plymouth Con., G.	Cal.	5,000,000	100,000	50	*	.....	.....	.....	2,280,000	Feb.	1888 .40
120	Quicksilver, pref., Q.	Cal.	4,300,000	43,000	100	.....	.....	.....	.....	1,705,791	Aug.	1890 1.50
121	" com., Q.	Cal.	5,700,000	57,000	100	.....	.....	.....	.....	643,000	July.	1882 .40
122	Quincy, C.	Mich.	1,000,000	40,000	25	200,000	Dec.	1862	.....	5,770,000	Feb.	1891 5.00
123	Republic, C.	Mich.	5,000,000	100,000	50	400,000	Dec.	1889	.30	4,312,587	June	1887 1.25
124	Richmond, s. L.	Nev.	1,350,000	54,000	25	*	.....	.....	.....	99,785	Feb.	1880 .50
125	Ridge, C.	Mich.	500,000	20,000	25	219,939	Mar.	1886	.50	585,000	Mar	1886 .05
126	Robinson Con., s. L.	Colo.	10,000,000	200,000	50	*	.....	.....	.....	100,000	Dec.	1882 .50
127	Robert E. Lee, s. L.	Colo.	10,000,000	500,000	20	.....	.....	.....	.....	4,460,000	July.	1889 3.00
128	Savage, s.	Nev.	11,200,000	112,000	100	6,604,000	Nov.	1889	.50	7,500	April	1883 .01
129	Shoshone, G.	Idaho	150,000	150,000	1	.....	.....	.....	.....	1,568,145	April	1888 .12½
130	Sierra Buttes, G.	Cal.	2,225,000	122,500	10	.....	.....	.....	.....	102,000	Jan.	1871 1.00
131	Sierra Nevada, G. s.	Nev.	10,000,000	100,000	100	6,296,910	May.	1890	.50	270,000	April	1889 .10
132	Sierra Nevada, s. L.	Idaho	1,000,000	1,000,000	1	*	.....	.....	.....	40,000	May.	1889 .02
133	Silver Cord, G. s. L.	Colo.	4,500,000	450,000	10	.....	.....	.....	.....	250,000	April	1889 .10
134	Silver King, G.	Ariz.	10,000,000	100,000	100	130,000	Nov.	1890	.30	1,950,000	July	1887 .25
135	Silver Mg. of L. V.	N. M.	500,000	500,000	1	*	.....	.....	.....	275,000	Dec.	1890 .05
136	Silverton, G. s. L.	Colo.	2,000,000	200,000	10	*	.....	.....	.....	50,000	Jan.	1881 .25
137	Small Hopes Con., s.	Colo.	5,000,000	250,000	20	*	.....	.....	.....	3,162,500	Oct.	1890 .10
138	Spring Valley, G.	Cal.	200,000	200,000	1	50,000	Oct.	1886	.25	3,595,000	June	1888 .05
139	Standard, G. s.	Cal.	10,000,000	100,000	100	100,000	June	1890	.50	155,000	Nov	1881 .05
140	Stormont, L.	Utah	500,000	50,000	1	*	.....	.....	.....	844,000	Dec.	1887 .10
141	St. Joseph, L.	Mo.	1,500,000	150,000	10	*	.....	.....	.....	9,000	April	1888 .02½
142	swansea, G.	Colo.	600,000	60,000	10	*	.....	.....	.....	100,000	Nov	1881 .20
143	Tamarack, C.	Mich.	1,000,000	40,000	25	520,000	April	1885	3.00	1,670,000	Oct.	1890 4.00
144	Tombstone, G. s. L.	Ariz.	12,500,000	500,000	25	*	.....	.....	.....	1,250,000	April	1882 .10
145	United Verde, C.	Ariz.	3,000,000	300,000	10	*	.....	.....	.....	97,500	Feb.	1884 .10
146	Valeca W.	N. M.	1,500	1,500	100	.....	.....	.....	.....	41,250	April	1886 2.50
147	Viola Lt., s. L.	Idaho	750,000	150,000	5	.....	.....	.....	.....	272,500	Oct.	1887 .37½
148	Ward Con., s. L.	Colo.	2,000,000	200,000	10	.....	.....	.....	.....	20,000	Dec.	1889 .05
149	Yankee Girl.	Colo.	2,500,000	250,000	10	.....	.....	.....	.....	1,275,000	July.	1887 .10
150	Yellow Jacket, G. s.	Nev.	12,000,000	120,000	100	5,508,000	Mar.	1889	.50	2,148,000	Aug.	1871 1.50
151	Weeb City, L. z.	Mo	55,000	11,000	5	.....	.....	.....	.....	4,400	July.	1889 .10
152	Woodside.	Utah	.....	.....	.....	.....	.....	.....	.....	25,000	Oct.	1889 .25
153	Young America.	Cal.	.....	.....	.....	.....	.....	.....	.....	175,000	.....	1889 .10

NON-DIVIDEND PAYING MINES.

	Name and Location of Company.	Capital Stock.	Shares. No.	Shares. Par	Assessments. Total levied.	Assessments. Date and am't of last.
1	Agassiz Cons., s. L.	Colo.	$2,500,000	50,000	$50	*
2	Allegheny, s.	Colo.	5,000,000	500,000	10	*
3	Allouez, C.	Mich.	2,000,000	80,000	25	$737,000 Jan. 1890 .70
4	Alpha Con., G. s.	Nev.	3,000,000	30,000	100	112,500 Sept. 1890 .25
5	Amador, G.	Cal.	10,080,000	100,800	100	3,359,800 Sept. 1890 .50
6	Amador, G.	Cal.	400,000	200,000	2	*
7	American Flag, s.	Colo.	1,250,000	125,000	10	300,000 June 1887 ....
8	Amity, s.	.....	250,000	250,000	1	*
9	Anglo-Montana, Lt.	Mont.	600,000	120,000	5	*
10	Astoria, G.	Cal.	200,000	100,000	2	*
11	Barcelona, G.	Nev.	5,000,000	300,000	25	*
12	Bechtel Con., G.	Cal.	10,000,000	100,000	100	173,500 Jan. 1883 .10
13	Belmont, s.	Nev.	5,000,000	50,000	100	735,000 April 1886 .10
14	Best & Belcher, G. s.	Nev.	10,080,000	100,800	100	2,279,275 Aug. 1890 .25
15	Big Pittsburg, s. L.	Colo.	20,000,000	200,000	100	*
16	Black Oak, G.	Cal.	3,000,000	300,000	10	*
17	Boston Con., G.	Cal.	10,000,000	100,000	100	170,000 Nov. 1883 .25
18	Bremen, s.	N. M.	5,000,000	500,000	10	*
19	Brownlow, s.	Colo.	250,000	250,000	1	*
20	Brunswick, G.	Cal.	2,000,000	400,000	5	*
21	Bullion, G. s.	Nev.	10,000,000	100,000	100	2,790,000 Dec. 1889 .25
22	Butte & Boston, C. s.	Mont.	5,000,000	200,000	....	.25
23	Calaveras, G.	Cal.	500,000	500,000	1	*
24	Carissa, G.	Wy...	500,000	100,000	5	*
25	Carupano, G. S. L. C.	Ven.	200,000	100,000	2	*
26	Cashier, G. s.	Colo.	500,000	250,000	2	*
27	Charles Dickens, G. s.	Idaho	1,250,000	250,000	5	*
28	Cherokee, G.	Cal.	1,500,000	150,000	10	*
29	Chollar, s.	Nev.	11,200,000	112,000	100	1,540,000 Nov. 1889 .50
30	Clear Island, T.	Dak.	1,000,000	500,000	2	*
31	Colchis, G.	N. M.	500,000	50,000	10	*
32	Comstock, G. s.	Nev.	10,000,000	100,000	100	35,000 Mar 1887 .15
33	Con. Imperial, G. s.	Nev.	5,000,000	50,000	100	1,875,000 July. 1890 .05
34	Con. Pacific, G.	Cal.	6,000,000	60,000	100	198,000 June 1890 .10
35	Con. Silver, s.	Mo....	2,500,000	250,000	10	*
36	Crescent, s. L.	Colo.	3,000,000	300,000	10	*
37	Crocker, G.	Ariz.	10,000,000	100,000	100	150,000 June 1890 .15
38	Crowell, G.	N. C.	500,000	500,000	1	*
39	Dahlonega, G.	Ga....	250,000	250,000	1	*
40	Dandy, s.	Colo.	5,000,000	500,000	10	*
41	Decatur, s.	Colo.	1,500,000	300,000	5	*
42	Denver City, s. L.	Colo.	5,000,000	500,000	10	*
43	Dolcita, G.	Colo.	300,000	60,000	5	*
44	Durango, G.	Colo.	500,000	500,000	1	*
45	Eastern Dev. Co., Lt.	N. S.	1,500,000	150,000	10	990,000 Mar 1886 1.00
46	El Cristo, G. s.	U.S.C.	1,000,000	500,000	2	*
47	El Dorado, G.	Cal.	1,000,000	250,000	4	*
48	El Talento, G.	U.S.C.	1,000,000	500,000	2	*
49	Empire, s.	Utah	10,000,000	100,000	100	*
50	Eureka Tunnel, s. L.	Nev.	500,000	100,000	100	*
51	Exchequer.	Nev.	10,000,000	100,000	100	865,000 July 1890 .25
52	Found Treasure, G. s.	Nev.	10,000,000	100,000	100	81,500 May 1890 .25
53	Gogebic I. Syn., I.	Wis.	5,600,000	200,000	28	*
54	Gold Cup, s.	Colo.	500,000	500,000	1	*
55	Golden Era, s.	Mont.	2,000,000	200,000	10	*
56	Gold Placer, G.	Colo.	5,000,000	200,000	25	229,314 Dec. 1885 .25
57	Gold Rock, G.	Cal.	1,000,000	500,000	2	*
58	Goodshaw, G.	Cal.	10,000,000	100,000	100	*
59	Grand Belt, C.	Tex.	12,000,000	120,000	100	*
60	Grand Duke.	Colo.	800,000	80,000	10	*
61	Great Remance, G.	U.S.C.	1,000,000	500,000	2	*
62	Gregory-Bobtail, G.	Colo.	550,000	550,000	1	*
63	Gregory Con., G.	Mont.	3,000,000	300,000	10	*
64	Harlem M. & M. Co., G.	Cal.	1,000,000	200,000	5	*
65	Head Cent. & Tr., s. G.	Ariz.	10,000,000	100,000	100	*
66	Hector, G.	Cal.	1,500,000	300,000	5	45,000 Jan. 1889 .15
67	Highland, C.	Mich.	500,000	25,000	20	*
68	Holywood.	Cal.	200,000	100,000	2	*
69	Hortense, s.	Colo.	2,000,000	200,000	10	*
70	Huron, C.	Mich.	1,000,000	40,000	25	280,000 May 1887 3.00
71	Iron, Gold & Silver, s.	N. M.	2,000,000	200,000	10	*
72	Ironton, I.	Wis.	1,000,000	40,000	25	*
73	Iroquois, C.	Mich.	1,250,000	50,000	25	*
74	J. D. Reymert.	Ariz.	10,000,000	100,000	100	*
75	Julia Con., G. s.	Nev.	11,000,000	110,000	100	1,463,000 Jan. 1889 .10
76	Lacrosse, G.	Colo.	1,000,000	100,000	10	*
77	Lee Basin, s. L.	Colo.	5,000,000	500,000	10	*
78	Mayflower Gravel.	Cal.	1,000,000	100,000	10	585,000 Mar 1890 .56
79	Medora, G.	Dak.	250,000	250,000	1	*
80	Mexican, G. s.	Nev.	10,000,000	100,000	100	2,791,960 Oct. 1890 .25
81	Middle Bar, G.	Cal.	400,000	200,000	2	*
82	Mike & Starr, s. L.	Colo.	5,000,000	200,000	5	*
83	Mollie Gibson.	Colo.	2,000,000	100,000	2	*
84	Monitor, G.	Colo.	100,000	1,000,000	1	*
85	Mutual Mg. & Sm.	W'sh.	100,000	100,000	1	*
86	Native, C.	Mich.	1,000,000	40,000	25	*
87	Neath, G.	Colo.	1,000,000	100,000	10	*
88	Nevada Queen, s.	Nev.	10,000,000	100,000	100	200,000 Oct. 1889 .25
89	New Germany, G.	N. S.	100,000	100,000	1	*
90	New Pittsburg, s. L.	Colo.	2,000,000	200,000	10	*
91	N. Commonw'h, s.	Nev.	10,000,000	100,000	100	85,000 April 1890 .25
92	North Standard, G.	Cal.	10,000,000	100,000	100	20,000 Nov .....
93	Noonday.	Cal.	600,000	60,000	10	208,000 Dec. 1881 .10
94	Oneida Chief, G.	Cal.	500,000	125,000	100	*
95	Oriental & Miller, s.	Nev.	10,000,000	400,000	25	*
96	Osceola, G.	Nev.	5,000,000	500,000	10	*
97	Overman, G. s.	Nev.	11,520,000	115,200	100	3,882,800 Dec. 1889 .25
98	Park, s.	Utah	2,000,000

NEW YORK MINING STOCKS QUOTATIONS.

DIVIDEND-PAYING MINES.

NAME AND LOCATION OF COMPANY.	Jan. 17.		Jan. 19.		Jan. 20.		Jan. 21.		Jan. 22.		Jan. 23.		SALES.
	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
Adams													
Alice							1.90						100
Atlantic, Mich											15.38		50
Belcher, Nev													
Belle Isle													
Bodie Cons., Cal					.90								100
Bos. & Mont., Mont													
Breece, Colo													
Bulwer, Cal							.25						600
Caledonia											.55		700
Calumet & Hecla, Mich											251½		10
Catalpa, Colo													
Chrysolite, Colo									.23				100
Colorado Cen.,Con.,Colo													
Cons. Cal. & Va., Nev	4.00				3.75				3.90				450
Crown Point, Nev									1.80				100
Deadwood, Dak													
Eureka Con													
Excelsior, Cal													
Father de Smet													
Franklin											17.13		100
Freeland, Colo									.18	.17			1,300
Gould & Curry, Nev					2.60				2.60				500
Hale & Norcross, Nev													
Holyoke													
Homestake, Dak													
Horn-Silver, Utah					3.00		3.10	3.00	3.00	2.70	2.90	2.75	3,377
Independence, Nev													
Iron Hill, Dak													
Kearsarge													
Leadville C., Colo					.12								1,000
Little Chief, Colo	.35		.35						.35				1,200
Mono, Cal													
Moulton, Mont													
Mt. Diablo, Nev													
Navajo, Nev													
N. Belle Isle, Nev					.45								100
Ontario, Utah													
Ophir, Nev							3.10						50
Osceola, Mich													
Plymouth, Cal							2.00		2.00		2.00		900
Quicksilver, Pref													
" Com													
Quincy, Mich													
Robinson Cons., Colo													
Savage											2.30		100
Sierra Nevada, Nev							1.70		1.80				300
Silver Cord							.29						100
Silver King, Ariz													
Silver Mg. of L. V													
Small Hopes													
Standard							1.75	1.50					300
Stormont, Utah													
Tamarack, Mich													
Yellow Jacket, Nev							2.25		2.25				250

NON-DIVIDEND-PAYING MINES.

NAME AND LOCATION OF COMPANY.	Jan. 17.		Jan. 19.		Jan. 20.		Jan. 21.		Jan. 22.		Jan. 23.		SALES
	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
Alpha, Nev													
Alta, Nev	.75						.70						300
American Flag, Colo					.05								200
Andes, Nev													
Amador, Cal													
Astoria, Cal	.04				.04		.04				.04		2,400
Belmont, Cal							.30		.30		.31		3,600
Best & Belcher, Nev					2.35		2.65		2.50		2.70		500
Bonanza King, Cal													
Brunswick, Cal					.09	.08	.09		.09		.09	.08	3,300
Bullion, Nev													
Butte & Bost., Mont													
Castle Creek, Idaho			.03										200
Challar, Nev											2.50		100
Col. & Beaver, Idaho													
Commonwealth, Nev													
Comstock T., Nev					.15								1,000
" bonds													
" scrip													
Con. Imperial, Nev													
Cons. Pacific, Cal													
Crescent, Colo													
Del Monte, Nev													
El Cristo, Rep. of Col							.50						100
Exchequer													
Hollywood, Cal													
Huron, Mich													
Julia, Nev	.30										.30		800
Justice, Nev													
Kossuth													
Lacrosse, Colo													
Lee Basin, Colo													
Mexican, Nev							2.60		2.45		2.70		400
Middle Bar	.04				.05	.04	.06	.04			.05	04	6,000
Monitor, Colo													
Mutual Sm. & Mg. Co	1.50	1.45	1.50				1.50				1.45		1,100
Nevada Queen, Nev													
N. Commonwealth, Nev													
Occidental, Nev	.85				.80	.75			.70				700
Oriental & Mil., Nev													
Overman, Nev													
Phœnix of Ariz	.70	.60	.89	.60	.64	.60	.61	.58	.64	.55	.64		4,100
Phœnix Lead, Colo													
Potosi													
Rappahannock											.02		1,000
S. Sebastian													
Scorpion													
Seg Belcher, Nev													
Silver Queen													
Sullivan Con., Dak													
Sutro Tunnel, Nev													
Sutter Creek, Cal	1.10		1.10										300
Tioga, Cal													
Union Cons., Nev	1.65										1.80		350
Utah, Nev	.60						.70	.65	.85				700

*Ex dividend. †Dealt at in the New York Stock Ex. Unlisted securities. ‡Assessment paid. §Assessment unpaid. Dividend shares sold, 11,787. Non-dividend shares sold 27,150. Total, New York, 38,937.

BOSTON MINING STOCK QUOTATIONS.

NAME OF COMPANY.	Jan. 16.		Jan. 17.		Jan. 19.		Jan. 20.		Jan. 21.		Jan. 22.		SALES.
Atlantic, Mich									15.00		15.00	14.50	239
Bodie, Cal											.50		500
Bonanza Development													
Bost. & Mont., Mont	41.00		41.00	40.25	41.00	40.50	41.00	40.25	40.50	39.25	39.75	39.50	3,485
Breece, Colo													
Calumet & Hecla, Mich	260		259½		260		255	250	253		250		135
Catalpa, Colo	.32½	.30									.30		4,500
Central, Mich									19.75				5
Chrysolite Colo													
Con. Cal. & Va., Nev													
Dunkin, Colo													
Eureka, Nev													
Franklin, Mich	17.50		17.38		17.50		17.50		70.00		16.75		539
Honorine, Utah													
Horn Silver, Utah													
Kearsarge			13.00	12.50	13.00	12.75	12.50		12.00		12.50	10.25	1,755
Little Chief, Colo													
Little Pittsburg, Colo													
Moulton													
Napa, Cal									4.00				100
Ontario, Utah													
Osceola, Mich	35.00		35.00				35.50		35.00	33.75	35.00	34.00	867
Pewabic, Mich													
Quincy, Mich									90.00	89.00	95.00	93.25	34
Ridge, Mich													
Sierra Nevada, Nev													
Silver King													
Stormont, Utah													
Tamarack, Mich	145		148		148		145		145				100
Tecumseh, Mich													

NAME OF COMPANY.	Jan. 15.		Jan. 17.		Jan. 19.		Jan. 20.		Jan. 21.		Jan. 22.		SALES.
Allouez, Mich	2.63	2.00	2.00						2.25	1.63	2.00		4,365
Arnold, Mich											.55		100
Aztec, Mich													
Brunswick, Cal													
Butte & Boston, Mont	15.50	15.00	15.00		16.00		15.25	15.13	15.25	14.63	15.25	15.00	1,084
Centennial, Mich	17.00				17.00						16.00		175
Comstock, T., Nev													
Copper Falls Mg													
Crescent, Colo									12½				360
Dana, Mich													
Don Enrique, N. M													
El Cristo, S. A													
Hanover, Mich													
Humboldt, Mich													
Hungarian, Mich													
Huron, Mich													
Mesnard, Mich													
National, Mich	3.75	3.50									3.50		120
Native, Mich													
Oriental & M., Nev													
Phoenix													
Pontiac													
Rappahannock, Va													
Santa Fe, N. Mex	.45										.47½	.50	2,475
Shoshone, Idaho													
South Side, Mich													
Star													
Washington, Mich													
Winthrop, Mich													

Boston: Dividend shares sold, 12,259. Non-dividend shares sold, 8,619. Total Boston, 20,878.

San Francisco Mining Stock Quotations.

COMPANY.	CLOSING QUOTATIONS.					
	Jan. 16.	Jan. 17.	Jan. 19.	Jan. 20.	Jan. 21.	Jan. 22.
Alpha						
Alta	.65	.70	.60	.60	.60	
Belcher						
Belle Isle	.40	.30				
Best & Bel	2.50	2.50	2.30	2.50	2.40	
Bodie	.80	.85	.75	.95	.85	
Bulwer	.20	.25	.50	.30	.20	
Challar	2.45	2.35	2.20	2.35	2.15	
Com'wealth	.70	.80	.80	.80	.80	
Con. C. & V	4.00	4.05	3.75	3.90	3.75	
Con. Pacific						
Crown Point	1.80	1.85	1.70	1.70	1.65	
Eureka C		3.50		3.00	4.50	
Gould & C	2.60	2.80	2 50	2.65	2.45	
Grand Prize						
Hale & N	1.85	1.70	1.50	1.50	1.40	
M. White						
Mexican	2.35	2.65	2.45	2.50	2.40	
Mono	.55	.55	.50	.55	.55	
Mt. Diablo			1.75			
Navajo	.15	.20	.15	.15	.15	
Nev. Queen	.30	.35	.30		.30	
N. Belle Isle		.35	.40	.50	.45	
N.Com'w'lth						
Ophir	3.20	3.60	3.20	3.30	3.10	
Potosi	4.80	5.00	4.75	4.90	4 60	
Savage	2.50	2.45	2.15	2.20	2.10	
Sierra Nev	1.70	1.90	1.70	1.80	1.70	
Union Con	1.80	2.00	1.90	1.95	1.85	
Utah	.70	.80	.70	.75	.75	
Yellow Jak	2.20	2.20	2.05	2.10	2.10	

COAL STOCKS.

NAME OF COMPANY.	Par val. of shares.	Jan. 17.		Jan. 19.		Jan. 20.		Jan. 21.		Jan. 22.		Jan. 23.		Sales.
		H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
American Coal														
Cambria Iron					20		20	19½	19½	19	16¼	16		451
Cameron Coal & I.Co														
Ches. & O. RR	100													
Chic. & Ind. Coal RR	100													
Do. pref	100													
Col. C. & I	100	37½	36½	38	37¼	37					36	35½		1,310
Col. & Hocking C. I	100										18¼		35½	100
Consolidation Coal	100													
Del. & H. C	100	134⅞	134	135	134⅝	135¼	134¼	135⅝		135	134⅝	134	133¼	1,039
D., L. & W. RR	50	138½	137¾	138⅝	138	138¼	137½	138½	138	138	137¼	137⅝	137½	1,898
Hocking Valley	100	27⅜	27	27⅝	27			27½	25½					590
Hunt. & Broad Top		19	18½	19				19⅝	19					335
Do. pref				44				44⅞	44½	44½	44			222
Illinois C. & Coke.Co														
Lehigh C. & N	50	47¾		48	47⅞	47¾	47⅝	48	47¾	48	47¾			1,438
Lehigh Valley RR	50	50¼		50⅝	50½	50⅞	50¾	50⅝	50½	50⅝	50⅜			763
Lehigh & Wilk.Coal	100													
Mahoning Coal	100													
Do. pref	100													
Maryland Coal				15¼								16		200
Morris & Essex	100					146½								200
New Central Coal	50										12		11½	145
N. J. C. RR	100	114¼		115		114		114		114	112¾			1,117
N. Y. & S. Coal	100													
N. Y., Susq. & West	100			8¾	8¼	9	8				8⅛	8¼	8¼	910
Do. pref	100					33¼					31⅝	31⅝	32½	32	900
N.Y. & Perry C. & I	100													
Norfolk & West. RR	50	16⅝		17		16½								425
Do. pref	50					56	55½	55⅛		54⅞	54⅜	55¼	55	970
Penn. Coal	50													
Penn. RR	50	52		52⅛	52	52	52⅜	52	51⅞	52	51¾			3,602
Ph. & R. RR		33½	33⅞	33½	32½	33	32⅜	33	32¾	32⅞	32¾	32⅝		**11,730
Sunday Creek Coal														
Do. pref	100													
Tennessee C. & I. Co		38	36¼	37⅛		38	36¼			37⅜	36	37¼	36	2,657
Do. pref				85						83				110
Westmoreland Coal														

**Sales in New York, 6,632; in Philadelphia, 5,098. Total sales, 31,082.

STOCK MARKET QUOTATIONS.

Baltimore, Md.

COMPANY.	Bid. L. H.	Asked. L. H.
Atlantic Coal	.90	$1.50
Balt. & N. C.	.05@.10	.12@.15
Big Vein Coal	....	1.10@1.45
Conrad Hill	....	.10
Cons. Coal	.26	28@.28½
Diamond Tunnel	....	....
George's Crk. C.	....	1.13
Lake Chrome	....	....
Maryland & Charlotte	....	..
North State	....	....
Silver Valley	....	.65@.70

Prices bid and asked, lowest and highest, during the week ending January 22.

Birmingham, Ala. Jan. 21.

COMPANY.	Bid. L. H.	Asked. L. H.
Ala. Coal & I. Co.	....	$100
Ala. Conn. C. & C. Co.	....	$23
Ala. R. Mill Co.	$100	....
*Alice Furnace	$104	....
Anna Howe G. Mg. Co.	$¼	$⅜
Bessemer Land	$26¾	....
Bir. Mg. & Mfg.	....	$35
Cahaba Coal Mg. Co.	....	$61
Camille Gold Mg. Co.	$½	....
De Bardeleben C. & I. Co.	$48	....
Decat. L. Imp.	$9	$10
Decatur Min. L.	....	$19
Ensley Land	$6½	$8
*Eureka	....	....
Florence L. & Mg. Co.	$17	$19
Gadsen Land	$3¾	$4
Hecla Coal Co.	....	....
Hen. S. & M. Co.	...	$15
Jagger-Townl'y C. & C. Co.	$8½	$10
Mag-Ellen	$100	....
Mary Lee C. & R. Co.	....	$25
Sheffield C. & I. Co.	....	$40
Sloss I. & S.	$20	$30
†Sloss I. & S	$84	....
‡‡ Sloss I. & S.	....	$45
Tuscaloose C. I. & L. Co.	....	$24
Ten. C. & I. Co.	$34	....
" pref.	$78	$80
Vulcan C. & C. Co	$5	....
Woodstock I. Co.	....	$30

* Bonds. † First mortgage. ‡‡ Second mortgage. ** Without interest.

Pittsburg, Pa. Jan. 21.

COMPANY.	B. $	A. $	Closing. $
Allegheny Gas Co.	.....	.....	.....
Bridgewater Gas Co.	.....	.....	.....
Chartiers Val. Gas.	5.00	12.00	11.00
Columbia Oil Co.	.....	3.00	3.00
Consignee Mg. Co.	.25	1.00	.40
Consolidated Gas Co.	.....	.....	.....
East End E. Light Co.	.....	.....	.....
East End Gas Co	.....	.....	.....
Forest Oil	.....	.....	.....
Hazlewood Oil Co.	.....	.....	.....
La Noria Mining	.15	.21	.18
Luster Mg. Co.	18.13	19.00	18.50
Mansfield C. & C. Co.	.....	.....	.....
Manuf'turers Gas Co.	20.00	23.00	23.00
Nat. Gas Co. of W. Va	.....	65.00	.....
N. Y. & Clev. Gas Coal.	38.00	.....	38.00
Ohio Valley Gas	.....	25.00	25.00
Pennsylvania Gas	.....	9.50	9.50
People's Natural Gas.	.....	.....	.....
People's N. G. & P. Co.	6.00	11.00	6.75
Philadelphia Co.	8.75	10.13	10.00
Pine Run Gas Co.	.....	35.00	.....
Pittsburg Gas	.....	.....	.....
Silverton Mg. Co.	.....	.....	.....
South Side Gas.	.....	.....	.....
Tuna Oil Co.	.....	.....	.....
Union Gas.	.....	.....	.....
Washington Oil Co.	.....	85.00	85.00
W'house Brake Co.	.....	74.00	74.00
W'house A. B. Co.	90.00	95.00	90.00
W'house E. Light.	6.63	9.75	9.00
W'moreland & Camb.	.....	.....	.....
Wheeling Gas.	12.00	15.00	13.75
Yankee Girl Mg	.....	.....	.....

St. Louis. Jan. 21.

CLOSING PRICES.

COMPANY.	Bid. $	Asked. $
Adams, Colo.	.....	$1.95
American & Nettie	.11¼	.50
Aztec, N. Mex.	.08	.....
Bi-Metallic	.....	.....
Central Silver	.06½	.07½
Cleveland, Colo.	.....	.....
Cleveland & An'r.	.....	.....
Cœur d'Alene	.....	.....
Elizabeth	2.50	2.55
Gold King	.08	.10½
Granite Mountain, Mont.	.....	.....
Hope	.....	.....
Ingram	.....	.....
I. X. L., Colo.	.....	.....
La Union	.02	.02½
Little Albert	.15	.....
Montrose Placer, Colo.	.47½	.50
Major Budd, Mont.	.....	.....
Mexican Imp	.....	.....
Mickey Breen	.80	.82½
Mountain Key	.....	.....
Nellie	.....	.....
Old Colony	.....	.....
Pat Murphy, Colo.	.03	.04
Puzzle	.....	.....
Richmond Hill	.....	.....
Samoa	.....	.....
Silver Age, Colo.	1.45	.....
Small Hopes, Colo.	.85	.....
Tourtelotte	.....	.....
West Granite, Mont.	.....	.....
Wire Patch	.13½	.15
Yuma, Ariz.	.46¼	.50

Trust Stocks. Jan. 23.

The following closing quotations are reported to-day by C. I. Hudson & Co., members of New York Stock Exchange:

CERTIFICATES.

Am. Cotton Oil. Tr. Repts.	$173/4@$181/4
Cattle Trust	@
Distillers' & Cattle Feeders'.	46¾@ 47¼
Linseed Oil	38¼@ 40
National Lead	19¼@ 19⅜
Standard Oil	160½@162
Sugar Refineries, Tr. repts.	77¼@ 77½

Trust Receipts.

Sales at the New York Stock Exchange week ending Jan. 23:

	Sales.	Price H.	Price L.
*American Cotton Oil.	1,840	20⅞	20
National Lead.	49,915	21⅛	19⅛
*Sugar	14 355	80	76¼

* Trust receipts.

Foreign Quotations.

London.

COMPANY.	Highest.	Jan. 9. Lowest.
Almada, Mex.	2s. 3d.	1s. 9d.
Amador, Cal.	10s.	7s. 6d.
Appalachian, N. C.	6d.	3d.
Canadian Phos., Can.	£½	£¼
Colorado, Colo.	3s.	2s. 6d.
Comstock, Utah.	....	....
Cordova	....	....
Cons. Esmeralda, Nev.	2s. 9d.	2s. 3d.
Denver Gold, Colo.	6d.	....
Dickens Custer, Idaho.	1s. 6d.	1s. 3d.
East Arevalo, Idaho.	2s.	1s.
El Callao, Venezuela.	....	....
Elmore, Idaho	2s.	1s. 6d.
Garfield, Nev	1s.	9d.
Jay Hawk, Mont.	1s. 3d.	9d.
Josephine, Cal.	1s. 6d.	6d.
Kohinoor, Colo.	2s. 3d.	1s. 9d.
La Luz, Mex.	2s. 3d.	1s. 9d.
La Valera, Mex.	20s. 6d.	17s. 6d.
Montana Lt., Mont.	17s.	15s.
New California, Colo.	6s.	5s.
New Consolidated	9d.	3d.
New Eberhardt, Nev.	1s.	6d.
New Emma, S. Utah.	3s.	2s. 9d.
Newfoundland, N. F.	3s. 6d.	3s.
N. Gold Hill, N. C.	2s. 3d.	1s. 9d.
New Guston, Colo.	£3	£2½
New Hoover Hill, N.C.	3s. 6d.	3s.
Old Lout, Colo	....	....
Palmarejo, Mex.	12s.	11s. 6d.
Pinos Altos, Mex.	6s.	5s. 6d.
Pittsburg Cons., Nev.	8s.	7s.
Richmond Con., Nev.	£1⅛	£1⅛
Ruby & Dunderb'g, Nev.	1s.	6d.
Sam Christian, N. C.	1s.	6d.
Sierra Buttes, Cal.	5s. 6d.	4s. 6d.
" Plumas Eur., Cal.	£11-16	£9-16
Sonora, Mex	....	....
United Mexican, Mex.	6s.	5s.
U. S. Placer, Colo.	9d.	3d.
Viola Lt., Idaho	1s. 6d.	1s.
Yankee Girl, Colo.	17s.	16s.

Paris.

	Jan. 8. Francs.
Belmez, Spain	860.00
Callao, Venez	41.25
Callao Bis., Venez	5.50
East Oregon, Ore	5.00
Forest Hill Divide, Cal.	.....
Golden River, Cal.	150.00
" " parts	30.00
Lexington, Mont	97.50
" parts	3.00
Rio Tinto, Spain	586.25
Tharsis, Spain	155.00

CURRENT PRICES.

Those quotations are for wholesale lots in New York.

CHEMICALS AND MINERALS.

Acid—Acetic, ℔ 100 lbs. $1.75@$2.00
Muriatic, 18° ℔ 100 lbs .80@1.00
Muriatic, 20° ℔ 100 lbs .90@1.10
Muriatic, 22° ℔ 100 lbs 1.00@1.20
Nitric, 36° ℔ 100 lbs 4.00@4.29
Nitric, 42° ℔ 100 lbs 3.50@4.00
Oxalic, ℔ 100 lbs 6.50@10.50
Sulphuric, 60° ℔ 100 lbs .70@.80
Sulphuric, 66° ℔ 100 lbs .75@.90

Alkali—
Refined. 48 p. c. 1.60@1.65
Refined, 58° 1.55@1.90

Alum—Lump, ℔ lb .04
Ground, ℔ lb. .05
Lump ℔ tou, Liverpool £4 17 6
Sulphate of Alumina, ℔ ton £4 10

Ammonia—Sul., ℔ 100 lbs. 3.15
Carb, ℔ lb. 7½@8½

Aqua Ammonia—18° ℔ lb. 4½
20°, ℔ lb. .6
22°, ℔ lb. 6@7
26°, ℔ lb. 10@11

Ammoniates—Azotine, ℔ unit 1 95@ 2 06
Blood, dried, red, ℔ unit, west 1 80@ 1 00
low grade, ℔ unit. 1 70@ 1 80
Concentrated tankage, ℔ unit 1 75@ 1 80
Bones, rough, ℔ ton .20 00@23 00
ground, ℔ ton. .25 00@28 00
Bone black, refuse, ℔ ton .17 50@19 50
Kieserite 6 00@ 6 50
Fish guano, dried. 18 50@19 00
acidulated. .10 00@— 00
wet. 8 50@ 9 50
Phosphate rock, f. o. b Char'n 6 00@ 7 25
undried. —@ 6 —
dried 7 00@ 7 50
ground. 8 00@11 50
Acid phosphate, 14% per unit. 72½@ 75
Pearl 6¼@6½
Asphaltum—P. ton. 13.00
Prime Cuban. ℔ lb. 4½@5½c.
Hard Cuban, P ton $28.00
Trinidad, refined, ℔ ton $30.00
Egyptian 8@9
Barium—Nitrate, ℔ lb. 8@8½
Barytes—Sulph., Am. prime white 17@20
Sulph., foreign, floated, ℔ ton. 19½@21.50
Sulph., off color, ℔ ton. 11.50@14.00
Carb., lump, f. o. b. L'pool, ton £6
No. 1, Casks, Runcorn, " " £4 10 0
No. 2, bags, Runcorn, " " 3 15 0
Bleach—Over 35 p. c., ℔ lb. 1.85@1.90
Borax—Refined, ℔ lb. 9½@9⅝
Concentrated 7¾@8⅛
Refined " Liverpool ℔ ton £29
Brimstone—*See Sulphur.*
Bromine—℔ lb. 37@38
Chalk—℔ ton 1.75
Precipitated, ℔ lb. 4¾@5
China Clay—English, ℔ ton 13.50@18.50
Southern, ℔ ton 13.50
Chrome Yellow—℔ lb. 10@2
Cobalt—Oxide, ℔ lb. 2.60@2.90
Copper—Sulph. English Wks. ton £20@£21
Copperas—Common, ℔ 100 lbs. 70
Best, ℔ 100 lbs. 75@1.00
Liverpool, ℔ ton, in casks. £1 15s.
Corundum—Powdered, ℔ lb. 4½@.9
Cream of Tartar—Am. 99%. 22½
Powdered, 99 p. c. 23
Emery—Grain, ℔ lb. 4½@5
Flour, ℔ lb. 2¾@3½
Feldspar—Ground, ℔ ton 15.00
Fuller's Earth—Lump, ℔ bbl. 90@95
Powdered, ℔ lb. 1⅞@2
Gypsum—Calcined, ℔ bbl. 1.25@1.50
Iodine—Resublimed 2.75
Kainit—℔ ton $9.75@$10
Kaolin—*See China Clay.*
Lead—Red, ℔ lb. 6¾@9
White, American, in oil, ℔ lb. 6¾@7¼
White, English, ℔ lb. 8½@8¾
Acetate, or sugar of, white 12@13
Nitrate 9@10
Lime Acetate—Amer. Brown .95@1.00
Gray 1.75@1.87½
Litharge—Powdered, ℔ lb. 6½@6¾
English flake, ℔ lb. 9@9½
Magnesite—Greek, ℔ ton 20.00
Manganese—Crude, per unit. 23@28
Oxide, ground, per lb. 2½@6½
Mercuric Chloride—(*Corrosive Sublimate*) ℔ lb. 70@72
Metallic Paint—Brown per ton. $20@25
Red $20@25
Mineral Wool—℔ lb 2
Mica—In sheets according to size.
1st quality, ℔ lb. 25@$6.00
Naphtha—Black 60
Ochre—Yellow, "B. F.," ℔ ton, f. o. b. mill 30.00
"J. F. L. S.," ℔ lb. ex dock 2½
Yellow 10@25
Rochelle 1.35@1.50
Washed Dutch —@—
Washed French 1⅝@2½
Washed Nat Oxford, Lump 6½@6¾
Washed Nat Oxford, Powder 7@7½
Golden 3¾@4
Domestic 3¼@1½
Domestic, for O. C. & W. P. ⅝@1
Oils, Mineral
Cylinder, light filtered 15@20
Dark filtered 14@21
Extra cold test —@—
Dark steam refined 10@18
Phosphate Rock—S. Carolina, per ton f. o. b. Charleston 6.00@7.25
Ground, ex vessel New York 11.00
Canadian Apatite, lump, f. o. b. at Montreal, ℔ ton 16.00
Phosphorus—℔ lb. 64@65
Precip., red 100@102
white 100@103
Plumbago—Ceylon, ℔ lb. 4@5
American, ℔ lb. 5@7
Potassium—Cyanide, ℔ lb 39@40
Bromide, ℔ lb 33
Chlorate, English, ℔ lb 11@14
Chlorate, powdered 13@14
Carb, ℔ lb. 4.70@5.54
Caustic, ℔ lb. 7½@8
Iodide 2.65@2.70
Muriate, ℔ 100 lbs. 1.82½
Nitrate, refined, ℔ lb. 6@8
Bichromate, ℔ lb. 10½@11
Dble. m'ure salt, basis of 48@50%. 1.07½
Sulphate, basis of 90% ℔ 100 lbs. 2.05
Yellow Prussiate 17½@18
Red Prussiate 42@45
Pumice Stone—Select lumps, lb. 3¼
Original cks., ℔ lb 1¾@2
Powdered, pure, ℔ lb. 2¼@2½
Pyrites—Non-cupreous, p. units 10d.
Quartz—Ground, ℔ ton 14.00@16.00
Rotten Stone—Powdered, ℔ lb. 3¼@3½
Lump, ℔ lb. 6@10
Salt—Liverpool, ground, ℔ sack 75@80
Turk's Island, ℔ bush. 25@28
Salt Cake—℔ lb. 70@75
Saltpeter—Crude, ℔ lb. 5¼@5½
Refined, ℔ lb. 6@8
Silex, ℔ ton. 14@25
Soda—Carb Ash, 48% 1.60@1.65
" high test 1.55@1.60
Caustic ash, 48% 1.62½@1.65
" high test 1.60
Newcastle, 48% — @ —
" high test 1.50@1.55
Bicarb, English 3.50@3.75
" American 3@3½
Crystal, carbonate 1.95@2.00
Caustic, 60% 3.40@3.50
" 70% 3.15@3.20
" 74% 3.15@3.20
" 77% 3.25@3.37½
Sal, English 1.17½@1.20
" American 1.10@1.15
Nitrate 1.80@1.85
Prussiate 17½@18
Phosphate 7@18
Stannate 8@15
Strontium—Nitrate, ℔ lb. 9@9½
Sulphur—Roll, ℔ lb. 1¾
Flour, ℔ lb. 20
Crude Brimstone, 2s., ℔ ton 27.00
Crude Brimstone, 3ds. ℔ ton 26.50
Sylvinit, 23@27%, S. F. P., per unit. 40@42½
Talc—Ground French, ℔ lb. 1¼@1½
Domestic, ℔ ton $18@$20
c. i. f. Liverpool, ℔ ton £4 5
Terra Alba—French 80@85
English 75@80
American, No. 1 —@—
American, No. 2 40@50
Tin—Crystals 15½@16
Muriate .8@ 3
Vermillion—American, ℔ lb. 61
English ℔ lb 82@85
Vitriol—(Blue), Ordinary, ℔ lb. 5½@5⅝
Extra, ℔ lb. 7
Zinc Oxide—Am., Dry, ℔ lb. 4½
Antwerp, Red Seal, ℔ lb. 6@6½
Paris, Red Seal, ℔ lb 6½@7
* Spot.

THE RARER METALS.

Aluminum—(Metallic), per lb. $1.50@$2
Sheet, per lb 2.50
Arsenic—(Metallic), per lb. .40
Barium—(Metallic), per gram. 4.00
Bismuth—(Metallic), per lb. 2.75
Cadmium—(Metallic), per lb. 1.00
Calcium—(Metallic), per gram. 10.00
Cerium—(Metallic), per gram. 7.50
Chromium—(Metallic), per gram. 1 00
Cobalt—(Metallic), per lb. 6.00
Didymium—(Metallic), per gram. 9.00
Erbium—(Metallic), per gram. 7.50
Gallium—(Metallic), per gram. 140.00
Glucinum—(Metallic), per gram. 12.00
Indium—(Metallic), per gram. 9.00
Iridium—(Metallic), per oz. 7.00
Lanthanum—(Metallic), per gr. 10.00
Lithium—(Metallic), per gram. 10.00
Magnesium—Per lb. 4.50
Manganese—(Metallic), per lb. 1.10
Chem. pure, per oz. 10.00
Molybdenum—(Metallic), per gm .50
Niobium—(Metallic), ger gram. 5.00
Osmium—(Metallic), per oz. 65.00
Palladium—(Metallic), per oz. 35.00
Platinum—(Metallic), per oz. 20.00@25.00
Potassium—(Metallic), per lb. 28.00
Rhodium—(Metallic), per gram. 5.00
Ruthenium—(Metallic), per gm. 5.50
Rubidium—(Metallic), per gram. 2.00
Selenium—(Metallic), per oz. 1.80
Sodium—(Metallic), per lb. 2.50
Strontium—(Metallic), per gm. .60
Tantalum—(Metallic), per gram. 9.00
Tellurium—(Metallic), per lb. 5.00
Thallium—(Metallic), per gram. .25
Titanium—(Metallic), per gram. 2.25
Thorium—(Metallic), per gram. 17.00
Tungsten—(Metallic), per oz. 2.25
Uranium—(Metallic), per lb. 5.00
Vanadium—(Metallic), per gm. 22.00
Yttrium—(Metallic), per gram. 9.00
Zirconium—(Metallic), per oz. 65.00

BUILDING MATERIAL.

Bricks—Pale, ℔ 1,000. 3.00@3.50
Jerseys, ℔ 1,000. 4.75@5.25
Up Rivers, ℔ 1,000. 5.00@5.50
Haverstraw seconds, ℔ 1,000. 5.50@6.00
Haverstraw firsts, ℔ 1,000. 6.00@6.25
Fronts, nominal, ℔ 1,000
Croton 14.00@16.00
Wilmington 20.00@21.00
Philadelphia @22.00
Trenton @22.00
Baltimore
Building Stone—Amherst freestone, ℔ cu. ft. 95@1.00
Brownstone, ℔ cu. ft. 1.00@1.35
Granite, rough, ℔ cu. ft. 45@1.25
Granite, Scotch, ℔ cu. ft. 1.00@1.15
Cement—Rosendale, ℔ bbl. 85@1.10
Portland, American, ℔ bbl 2.15@2.45
Portland, foreign, ℔ bbl. 2.40@2.50
Portland, " special brands 2.60@2.85
Roman, ℔ bbl. 2.75@2.90
Keene's coarse, ℔ bbl. 4.50@5.50
Keene's fine, ℔ bbl. 7.25@8 50
Slate—Purple and green roofing, ℔ 100 ft. 7.00@7.50
Red roofing, ℔ 100 sq. ft. 12.00
Black roofing, ℔ 100 sq. ft. 4.25@5.50
Lime—Rockland, common, ℔ bbl. .90
Rockland, finishing, ℔ bbl. 1.10
St. John, com. and finish., ℔ bbl. 85@ .90
Glens Falls, com. and fin., ℔ bbl. 85@1.10
Labor—Ordinary, ℔ day. 1.50@2.00
Masons, ℔ day 4.00
Plasterers, ℔ day 4.00
Carpenters, ℔ day 3.50
Plumbers, ℔ day 3.50
Painters, ℔ day 2.50@3.50
Stonesetters, ℔ day 3.50@4.00
Tilelayers, ℔ day 3.50@4.50
Bricklayers, ℔ day 4.00